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# Non-Proliferation Challenges Facing the Trump Administration

Robert Einhorn

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## EXECUTIVE SUMMARY

The global nuclear non-proliferation regime, as it has evolved since the entry into force of the Nuclear Non-Proliferation Treaty (NPT) in 1970, has been remarkably resilient. Despite predictions of a “cascade of proliferation,” there are currently only nine states with nuclear weapons, and that number has remained the same for the past 25 years.<sup>1</sup> The NPT is nearly universal, with 190 parties and only five non-parties (India, Israel, North Korea, Pakistan, South Sudan). Several countries voluntarily abandoned nuclear weapons development programs (Argentina, Brazil, Egypt); several others were forced diplomatically or militarily to give up the quest (Iraq, Libya, South Korea, Syria); three former Soviet republics inherited nuclear weapons but gave them up (Belarus, Kazakhstan, Ukraine); and one country built a small arsenal before unilaterally eliminating it (South Africa). With Iran’s path to nuclear weapons blocked by the Joint Comprehensive Plan of Action (JCPOA) for at least 10 to 15 years, there are no non-nuclear weapon states currently believed to be pursuing nuclear weapons, according to U.S. government sources. And despite cases of nuclear smuggling and continuing interest of terrorist groups in acquiring nuclear weapons, no thefts of enough fissile material to build a bomb are believed to have taken place.

### *Success to date, but warning signs for the future*

The success of the non-proliferation regime to date could understandably give rise to speculation that we have seen the end of nuclear proliferation—that the number of nuclear-armed states will remain capped at single digits. But recent international developments suggest that such an optimistic assessment may be premature and that continued success cannot be taken for granted.

- In today’s unstable and uncertain security environment—with Russia, China, North Korea, and Iran challenging the status quo—governments are more likely to reevaluate their fundamental security choices.
- North Korea’s accelerated nuclear and missile programs threaten Northeast Asia and eventually the U.S. homeland and could prompt South Korea and Japan to reconsider their nuclear options.
- While the JCPOA has worked well so far, key restrictions will expire after 10 or 15 years. In any event, the agreement’s future is in question, perhaps motivating Saudi Arabia and others to hedge their nuclear bets.
- The willingness of U.S. allies and security partners to forgo nuclear weapons has depended heavily on their confidence in American security assurances, but there is a growing perception that the United States may reduce its overseas military presence and scale back its security commitments.
- The cooperation of Russia and China is often essential to achieving key non-proliferation goals, but the downturn of U.S. bilateral relations with Moscow and Beijing could prevent such cooperation.
- The safeguards system of the International Atomic Energy Agency (IAEA) is indispensable to verifying non-proliferation obligations, but increasing demands, budgetary shortfalls, and growing politicization among IAEA members could undermine its effectiveness.

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<sup>1</sup> By the beginning of the 1990s, as a result of its covert reprocessing program, North Korea had produced enough plutonium for one or two nuclear weapons. It is not known precisely when Pyongyang “weaponized” that plutonium. It is assumed here that North Korea could well have fabricated its first nuclear explosive device 25 years ago and that, at a minimum, the DPRK had a nuclear weapons “capability” 25 years ago. The other eight nuclear-armed states are China, France, India, Israel, Pakistan, Russia, the United Kingdom, and the United States.

- National and multilateral export controls have impeded access to proliferation-sensitive materials, equipment, and technologies, but illicit procurement networks have become more sophisticated and adept at circumventing those controls.
- None of the countries now embarking on civil nuclear power programs say they are planning to acquire enrichment or reprocessing capabilities, but many of them are unwilling to forswear what they consider to be their “right” eventually to have such dual-use capabilities.
- Great progress has been made in reducing, consolidating, and securing potentially vulnerable weapons-usable nuclear materials worldwide, but much remains to be done. U.S.-Russian cooperation has ended and the momentum generated by the 2010-2016 Nuclear Security Summit process may not be sustained.
- Since the optimism of President Obama’s 2009 Prague speech and the signing of the 2010 New START Treaty, nuclear arms control efforts have stalled—with the deterioration of U.S.-Russian relations, Moscow’s apparently increased reliance on nuclear weapons, mutual accusations of Intermediate-Range Nuclear Forces Treaty (INF) violations, and concerns about a new arms race.
- Polarization within the NPT membership has reached new heights, with many non-nuclear weapon states—frustrated by the pace of nuclear disarmament—supporting a treaty to ban nuclear weapons, which opponents of the ban believe will weaken the NPT and delegitimize the nuclear deterrence that allows U.S. non-nuclear allies to forgo nuclear weapons.

## Challenges for the Trump administration

The Trump administration inherits a global nuclear non-proliferation regime that has been more effective and durable than many observers expected, but the regime may now be coming under stress. To ensure that it will continue to serve the security of the United States and its partners, the Trump administration will need to address the following non-proliferation challenges.<sup>2</sup>

### 1. Dealing with North Korea’s nuclear and missile capabilities

The Trump administration basically has two options for addressing the North Korean threat. The first would seek to sharply increase pressure on Pyongyang by ratcheting up sanctions, curtailing its hard currency earnings, and impeding its imports of sensitive technologies. China would be pressed hard to join in this campaign, including by threatening to sanction Chinese entities that facilitate North Korea’s illicit efforts. The United States would work with South Korea and Japan to strengthen alliance defense capabilities and reinforce the U.S. extended nuclear deterrent. Ideally, this option would get North Korea to unilaterally curb or give up its nuclear and missile programs. More realistically, it would be the basis for a potentially long-term containment strategy that would aim to deter Democratic People’s Republic of Korea (DPRK) aggression, reassure U.S. allies, and ultimately result in the elimination of North Korea’s threatening capabilities when the regime finally collapses or is fundamentally transformed.

The second option involves a dual-track strategy of pressure and negotiations. Beijing’s support for any approach to North Korea is essential and, while

<sup>2</sup> Addressing the destabilizing nuclear arms competition between Pakistan and India is certainly a challenge, but not considered here to be a nonproliferation challenge. The United States surely would have preferred that India and Pakistan (and Israel) join the NPT as non-nuclear weapon states. But they never did and therefore never violated the Treaty. While the United States will never accept them as “nuclear weapon states” as defined by the NPT, it long ago recognized that they will not join the NPT and will remain nuclear-armed states for the foreseeable future. Therefore, the South Asia nuclear challenge is not a nonproliferation challenge (i.e., getting the two rivals to give up their nuclear capabilities). Rather, it is to reduce nuclear risks, both the risk of nuclear war and the risk of “loose nukes” and nuclear terrorism. This contrasts with the nonproliferation challenge of North Korea, which joined and violated the NPT and where the U.S. goal is the complete elimination of Pyongyang’s nuclear capability.



China would oppose a “pressure only” strategy, it is more likely to join in pressuring Pyongyang in order to provide leverage for a negotiated solution, as it did in the case of Iran. South Korea’s support is also essential, and whether its next president is a conservative or progressive, the Republic of Korea (ROK) public will insist on negotiations. The immediate goal of negotiations would be an interim freeze on DPRK nuclear and missile capabilities, with a commitment eventually to achieve complete denuclearization. Like the first option, this one would also involve building up alliance defenses and deterrence as well as bringing much greater pressure to bear on Pyongyang.

The dual-track approach provides no assurance of success. But compared to a “pressure only” strategy, it stands a better chance of gaining the crucial support of Beijing and Seoul, putting effective pressure on the DPRK, and arresting the growth of the DPRK’s nuclear and missile programs.

## **2. Blocking Iran’s path to nuclear weapons**

The United States has an interest both in preventing Iran from acquiring nuclear weapons and in thwarting Iranian designs to expand its influence in the Middle East at the expense of U.S. regional partners. With Iran complying with its nuclear commitments under the JCPOA and none of the JCPOA parties willing to renegotiate the nuclear deal, the best course of action for the Trump administration is to preserve the JCPOA and promote its strict enforcement, while at the same time actively pushing back against provocative Iranian behavior not covered by the deal and seeking to prevent Iran from acquiring nuclear weapons after key JCPOA nuclear restrictions are scheduled to expire. Such an approach would include the following elements:

- The United States should firmly resist any Iranian efforts to weaken or evade its nuclear commitments and should seek to maintain international support for re-imposing previously suspended sanctions in the event of Iranian non-compliance. At the same time, if Washington wants Tehran to continue fulfilling its

nuclear commitments, it is important that the Iranians receive the sanctions relief to which they are entitled.

- In close coordination with its regional partners, the United States should take a more assertive approach to countering destabilizing Iranian behavior. That would include maintaining a formidable U.S. military presence in the region; reacting firmly to any Iranian attempts to challenge U.S. military assets; bolstering the defense capabilities of Gulf partners through arms transfers, training, and joint exercises; addressing the Iranian missile threat by impeding missile-related procurement, imposing missile-related sanctions, and promoting integrated regional missile defenses; inhibiting Iran’s illicit arms supplies to its regional proxies; and exposing Iranian human rights abuses (including the unjustified incarceration of dual nationals).
- The United States should enforce existing non-nuclear sanctions against Iran (which are not precluded by the JCPOA) and, when warranted, impose new sanctions for non-nuclear reasons (e.g., support for terrorist organizations and other proxies, ballistic missile activities, human rights abuses). Washington should ensure that any new sanctions are well justified and carefully targeted on Iran’s non-nuclear behavior in order to avoid the impression that the United States is seeking to restore pre-JCPOA sanctions under a non-nuclear label and reverse the gains of sanctions relief—an impression that could result in opposition from America’s P5+1 partners and Tehran scaling back the implementation of its nuclear commitments. While working with Congress on any new sanctions legislation, the Trump administration should resist measures that would contravene the JCPOA (e.g., rescinding the license for a Boeing aircraft sale) or that are intended to provoke the Iranians to withdraw from it.
- The United States, hopefully with Russian support, should seek to persuade Iran to forgo the

acquisition of an industrial-scale enrichment capacity when key JCPOA restrictions expire, or, at a minimum, to defer the dates at which those restrictions expire. In exchange, Washington could offer inducements, such as terminating primary U.S. sanctions that prevent U.S. entities and individuals from doing business with Iran.

- Regardless of whether the expiration dates are eventually modified, the United States should seek to deter Iran from breaking out of its obligations and producing nuclear weapons, whether before or after 15 years. It should declare that it is U.S. policy to prevent Iran from acquiring nuclear weapons and that the United States is prepared to use military force, if necessary, to stop Iran from breaking out and producing nuclear weapons.

### **3. Reducing incentives for other states to go nuclear**

With Iran's path to nuclear weapons currently blocked, there are no non-nuclear weapon states currently believed to be pursuing nuclear weapons. The Trump administration should seek to keep it that way.

#### ***South Korea***

Alarm over the nuclear and missile programs of North Korea and the belligerence of its leader have triggered support among some South Korean politicians, media figures, and pundits for an ROK nuclear weapons capability. ROK government leaders are firmly opposed to having nuclear arms, and supporters of the nuclear option remain a small majority. But while South Korean leaders continue to have faith in the U.S.-ROK alliance, they believe the U.S. extended nuclear deterrent can be strengthened, including by giving South Korea a more prominent role in the planning of the deterrent and by permanently stationing U.S. "strategic assets" (such as nuclear-capable aircraft and perhaps even U.S. nuclear weapons) in South Korea.

While U.S. officials have resisted greater ROK participation in nuclear decision-making and re-deployment of U.S. nuclear weapons to the peninsula, they have made a major effort to allay any concerns about the U.S. commitment to ROK security. They have demonstrated U.S. support with major joint military exercises, plans to deploy the Terminal High-Altitude Area Defense (THAAD) missile defense system, visits and fly-bys of U.S. strategic assets (including nuclear-capable bombers deployed to Guam), and regular, high-level reaffirmations of commitment, most recently during Secretary of Defense Jim Mattis' February 2017 visit.

South Koreans appreciate these measures of reassurance, but they are looking for additional ways to reinforce extended deterrence. To keep the ROK's interest in its own nuclear capability low, the Trump administration should consider how it can be more responsive to South Korea's desire to play a more significant role in extended deterrence, whether in terms of sharing more information about U.S. plans, giving the ROK more responsibility in the planning process, or deploying certain U.S. strategic assets in South Korea more persistently, or even permanently.

#### ***Japan***

Largely as a result of the nuclear bombs dropped on Hiroshima and Nagasaki in 1945, the vast majority of Japanese oppose the acquisition of nuclear weapons (in contrast with majority support for nuclear arms in South Korea). In addition, Prime Minister Shinzo Abe and other Japanese leaders voice their strong opposition to the possession of nuclear weapons. Still, Japan has long pursued a hedging strategy by developing and operating enrichment and reprocessing facilities that serve genuine civil nuclear energy objectives while at the same time providing an option to build nuclear weapons relatively quickly.

The Japanese face increasing threats. Like the South Koreans, they are concerned by the growing North Korean threat. But the Japanese regard China as posing the more profound, long-term challenge,

and they see China's increasingly assertive posture, including its ambitious conventional and nuclear modernization programs, as evidence of Beijing's intention to challenge U.S. military superiority and dominate the region.

Japan has responded to the North Korean and Chinese threats by boosting its own conventional defense capabilities as well as by relying heavily on the U.S.-Japan alliance. Like South Korean leaders, Japanese leaders continue to have faith in the alliance. But also like the South Koreans, they seek reassurance that they can count on the U.S. extended deterrent. The United States has gone to great lengths to reassure its ally, including by providing frequent, high-level affirmations of support, including the public assurance, recently repeated by Secretary Mattis, that the Japanese-claimed Senkaku Islands are covered by the U.S.-Japan security treaty.

Still, the Japanese, like the South Koreans, can never be reassured enough. We can expect that in bilateral discussions about extended deterrence, Tokyo will seek many of the same things that Seoul is pressing for. While the likelihood of Japan eventually opting for nuclear weapons is low (and significantly lower than that of the ROK), it still behooves the Trump administration to give priority in its bilateral relations with Tokyo to addressing its ally's anxieties and ensuring that it remains confident of U.S. security guarantees.

### ***Saudi Arabia***

While the Kingdom of Saudi Arabia seems comfortable with the JCPOA for the time being, it is convinced that Iran will pursue nuclear weapons when restrictions on enrichment expire. Their concerns about Iran, moreover, are not confined to the nuclear issue. They believe Tehran is using proxies and acting directly to destabilize the region and achieve hegemony. While Riyadh's concerns about Iran's behavior have grown, its confidence in the United States as a provider of security has declined. It believes the Obama administration did not do enough to support its traditional regional friends and was

prepared to accept a central role for Iran in regional affairs at the expense of the Gulf Arabs.

Given its concerns about U.S. reliability, the Saudis have begun to act more assertively and independently, especially in prosecuting their military campaign in Yemen. However, Saudi officials point out that, given the close U.S.-Saudi defense links that have long been the foundation of Saudi security, the kingdom has little choice but to continue relying on the United States.

Notwithstanding their dependence on the United States, Saudi leaders have informally expressed the view that, if the Iranians acquire nuclear weapons, Saudi Arabia will have no choice but to follow suit. In seeking to match Iran, what the Saudis would lack is not motivation or financial resources but nuclear infrastructure and expertise. The Saudis have ambitious civil nuclear energy plans, but they are starting from scratch and their plans will take decades to materialize.

Given the infeasibility for the foreseeable future of the kingdom acquiring an indigenous capability to produce fissile material, speculation has turned to the possibility of Saudi Arabia acquiring the necessary materials or even nuclear weapons from Pakistan, which reportedly received financial support from Saudi Arabia for its nuclear weapons program. While rumors persist that Islamabad agreed to help Riyadh acquire nuclear weapons, senior Saudis and Pakistanis deny such an understanding exists. If it ever did exist, it was probably a vague, unwritten understanding reached long ago at the highest level, and it is unlikely that Islamabad would be willing to follow through on it today.

So the probability of Saudi Arabia acquiring nuclear weapons must be considered low. Keeping it low should be a significant element of the Trump administration's approach to the kingdom. The administration should consult regularly with Riyadh on Iran's implementation of the JCPOA, conclude a bilateral civil nuclear agreement even if it does not involve a legally binding renunciation by Saudi Arabia of fuel



cycle capabilities, and most importantly demonstrate to the Saudis and other Gulf partners that the United States will counter nefarious Iranian influences and remain committed to their security.

### ***Other countries worth watching***

There are a handful of countries that, for a variety of reasons—including past interest in nuclear weapons, a challenging external security environment, the availability of indigenous technical expertise, or a shift toward less transparent and more autocratic domestic governance—might be tempted to reconsider their nuclear options. Among them are Egypt, Turkey, Syria, Ukraine, and Myanmar. Currently, none of them is likely to pursue nuclear weapons, but it would be prudent to put them and perhaps others on a watch list.

#### **4. Discouraging the spread of enrichment and reprocessing capabilities**

Discouraging the spread of enrichment and reprocessing capabilities has been a key element of U.S. non-proliferation policy since the Ford administration in the mid-1970s. Fortunately, interest by additional states in building fuel cycle facilities has declined in recent years, both because the economic justification is very weak and because a recognition of the proliferation risks associated with enrichment and reprocessing has led to tighter restrictions on the transfer of fuel cycle equipment and technology.

So, at least at present, the spread of enrichment and reprocessing capabilities does not appear to be a pressing problem. But if China builds a large commercial reprocessing facility or if Japan restarts its Rokkasho reprocessing plant, reprocessing could be given a new lease on life. And some countries now embarking on nuclear power programs may decide to acquire enrichment or reprocessing capabilities regardless of the unfavorable economics. Therefore, despite the current lull in demand for fuel cycle programs, preventing their spread should remain a feature of U.S. non-proliferation policy, and could include the following elements.

- Encourage Beijing to hold off on buying a large reprocessing plant and urge Japan to postpone the restart of the Rokkasho facility, at least until enough reactors are online to utilize the plutonium and thereby avoid the further accumulation of plutonium in Japan.
- In new U.S. civil nuclear cooperation agreements with non-nuclear weapon states, seek a legally binding commitment by the U.S. partner not to engage in enrichment or reprocessing. But if that is not achievable, Washington should be prepared, if it sees a net non-proliferation gain, to find alternative ways of discouraging fuel cycle programs. Such measures could include not banning fuel cycle programs but instead giving the United States the right to terminate cooperation if its partner later decides to pursue them, or requiring a legally binding renunciation in a shorter-than-usual agreement (10-20 years).
- Reduce incentives for reprocessing by exploring various approaches to the “back end” of the fuel cycle, including greater reliance on interim dry cask storage; spent fuel take-back and “cradle-to-grave” fuel supply arrangements; collaborative research on deep borehole disposal of spent fuel; cooperative research and development of advanced nuclear reactors and fuel cycles that do not involve reprocessing; and exploration of repositories for the final disposal of spent fuel, drawing on promising developments in Finland and South Australia.
- Explore regional approaches, such as a fuel-cycle-free zone in Southeast Asia or a reprocessing-free zone in the Gulf region, or multinational approaches, such as an arrangement in which a state invests in a multinational enrichment facility managed and operated by existing holders of enrichment technology and, in exchange, receives guaranteed fuel supplies but no access to enrichment technology.

## 5. Strengthening the non-proliferation toolkit

Another key challenge is ensuring that measures and mechanisms that strengthen the non-proliferation regime as a whole—including export controls, interdiction arrangements, IAEA safeguards, and capacity-building assistance—are effective and able to cope with the changing proliferation threat.

### *Export controls*

While national and multilateral export controls have played a major role in impeding transfers of proliferation-sensitive items, the performance of many national control systems remains uneven, with shortfalls both in technical capacity and political will.

A key focus of U.S. attention should be China, which is the number one target of illicit procurement networks. Beijing has set up an extensive export control system but does not devote sufficient resources to it, and enforcement can be weak. To get China to implement its controls more conscientiously, the United States will have to elevate this issue to the highest levels. Export controls should also be on the bilateral agenda when senior U.S. officials meet with their counterparts in Russia and in the transit and transshipment countries of Southeast Asia and the Middle East.

The 48-nation Nuclear Suppliers Group's (NSG) recent preoccupation with whether to admit non-NPT states—mainly India but also Pakistan—has detracted from the NSG's normal export control responsibilities. The United States, which has pressed for India's immediate membership, should seek an early solution in which all non-NPT states would be eligible if they meet certain criteria, such as effective export controls and physical security measures. Under this approach, India would be admitted soon and Pakistan later, when it is able to demonstrate its commitment to those criteria.

With the membership issue out of the way, the United States should seek to strengthen NSG guidelines, including by making a recipient state's adherence to the IAEA Additional Protocol a condition of nuclear

supply and by requiring recipients to gain suppliers' consent to enrich or reprocess any materials supplied. The NSG's Technical Working Group should ensure that the NSG's control lists are updated to take into account evolving trends in illicit procurement practices and emerging technologies of proliferation relevance, such as pyroprocessing, laser isotope separation enrichment, and additive manufacturing.

### *Interdictions*

The Trump administration should assertively reach out to other governments to seek their cooperation in stopping illicit proliferation-sensitive transactions. It should also work through the Proliferation Security Initiative to reinforce the readiness of its members to cooperate in interdiction operations and strengthen their capacity to do so.

The Trump administration should explore the possibility of a new U.N. Security Council resolution that would authorize U.N. member states to search a ship or aircraft, regardless of nationality and even if it is located in international waters or airspace, if there is reason to believe it is carrying nuclear weapons or other weapons of mass destruction (WMD) or materials or equipment intended for use in producing WMD.

### *IAEA safeguards*

To maintain the effectiveness of IAEA safeguards as a non-proliferation tool, the United States should support significant growth in the agency's regular budget, pressing traditionally tight-fisted European allies to regard the agency as an exceptional national security instrument deserving of special budgetary consideration. Washington should also make a major push for universal adherence to the Additional Protocol, call on the agency to make more frequent use of its "special inspections" authority, urge members to report all dual-use exports to the agency, and support new agency analytic methods, such as the "state-level concept," that can provide insights into the capabilities and intentions of states that cannot be obtained through traditional safeguards.

The United States should also support incorporating some of the JCPOA's innovative verification features into the IAEA's general safeguards system, including greater accountancy of uranium mines and mills, the safeguarding of yellowcake, the monitoring of centrifuge production, greater use of online monitoring, and a timeline for access to undeclared sites.

### ***Intelligence***

Information from intelligence sources is a vital non-proliferation tool and is necessary to supplement the IAEA safeguards system. In the President's National Intelligence Priorities, nuclear proliferation and nuclear terrorism should remain in the highest category. To ensure that intelligence information can be shared with foreign governments and international organizations without compromising sources and methods, a senior level U.S. government mechanism should be established to rule on whether, how, and with whom such information can be used to advance non-proliferation policy goals.

### ***Capacity building***

The non-proliferation regime is only as strong as its weakest link. To assist other countries to adopt and enforce effective non-proliferation controls, the United States has pursued a range of programs that help countries establish necessary legal, regulatory, and bureaucratic structures; provide equipment and training; and share best practices and other technical advice. They cover such areas as export controls, border security, physical protection, and nuclear smuggling. The European Union, Japan, and other countries have similar programs. These capacity building programs provide a substantial national security payoff at a modest price and deserve strong continued support.

## **6. Sustaining momentum in nuclear security**

A critical challenge for the Trump administration is sustaining the progress that has been made over the past 25 years in nuclear security programs designed to prevent terrorists from gaining access to nuclear

weapons and the weapons-usable fissile materials necessary to build them. As chief sponsor of the Nuclear Security Summit (NSS) process that ended in 2016, the United States should seek to ensure that the commitments made during the process are fulfilled, including the commitment to support an enhanced nuclear security role for the IAEA.

The Trump administration's goal of improving relations with Russia may provide an opportunity to rebuild bilateral cooperation on nuclear security that was terminated in recent years. As co-chairs of the 86-nation Global Initiative to Combat Nuclear Terrorism (GICNT), Moscow and Washington might seek to expand GICNT's nuclear security mission, including by providing a forum for discussion of nuclear security principles and best practices. The two countries could also revisit some projects that were suspended, including the Plutonium Management and Disposition Agreement to dispose of weapons-grade plutonium, as well as their joint research on the feasibility of converting several Russian research reactors to operate on low-enriched uranium fuel rather than on weapons-grade uranium. And they could complete collaborative work on repatriating Russian-origin highly enriched uranium from third countries such as Belarus and Kazakhstan.

While seeking to restore U.S.-Russian cooperation in the nuclear security area, the Trump administration should also continue and expand bilateral security engagements with other key nuclear powers. Collaboration with China is especially promising, including the establishment of a world-class nuclear security Center of Excellence in Beijing and agreement to work together to convert Chinese-supplied reactors in Ghana and Nigeria to operate on low-enriched fuel. Long-standing bilateral nuclear security cooperation with Pakistan has been productive, and more limited cooperation with India could usefully be expanded.

Given the priority the Trump administration has assigned to preventing terrorism, including WMD terrorism, the decline in recent years in funding for U.S. international nuclear security programs should be reversed.

## 7. Reinforcing the NPT

Although polarization among NPT parties is not new, the divisions have gotten to the point where they could erode the effectiveness of the non-proliferation regime. The Trump administration should do what it can reduce the polarization and shore up support for the NPT.

### *The ban treaty*

The United States should not participate in negotiations on a treaty to ban nuclear weapons or adhere to it once it is concluded. But rather than mount a futile campaign to block it, Washington should use its influence indirectly to promote an outcome that does not damage the NPT or non-proliferation regime. It should seek to promote a short, normative treaty that expresses the aspirations of its supporters but does not create a new legal regime at variance in any way with the NPT. It is especially important to avoid a situation where a country can withdraw from the NPT, join a ban treaty without IAEA verification obligations, and take advantage of the absence of scrutiny to pursue nuclear weapons. The ban treaty should therefore require its parties also to be members of the NPT in good standing.

### *NPT Article VI*

If additional U.S.-Russian reductions in deployed strategic weapons and systems below New START levels prove too difficult for the time being, Washington and Moscow should pursue other means of demonstrating their commitment to pursue nuclear disarmament under Article VI of the NPT. They could take parallel steps to reduce their inventories of non-deployed nuclear weapons, hasten the rate of warhead dismantlement, or declare additional amounts of fissile material formerly allocated to their nuclear weapons programs as excess to their nuclear weapons needs. They could also engage in bilateral strategic stability talks, which could address their current differences on the components of strategic stability, consider confidence-building measures to reduce current nuclear tensions in Eastern Europe,

and lay the groundwork for further nuclear reductions as political conditions improve.

### *NPT review process*

At their 2020 NPT Review Conference, the 50th anniversary of the NPT's entry into force, the parties should not insist on the all-or-nothing approach to the conference outcome that has contributed to discord and paralysis in the non-proliferation regime. Instead of requiring that the conference final document be approved by consensus, which has resulted in brinkmanship and a failure at half the review conferences to arrive at any outcome, the parties should allow the adoption of a final document that contains proposals that enjoy a consensus as well as those that do not. This simple modification would produce a less contentious and more constructive conference—one more likely to come up with practical ideas for strengthening the treaty.

### *NPT withdrawal*

One of the NPT's most serious weaknesses is that, if a party exercises its right under Article X to withdraw from the treaty, its safeguards agreement with the IAEA automatically lapses, enabling it without legal restriction to use its previously safeguarded nuclear materials, equipment, and facilities to produce nuclear weapons. To address this loophole, non-nuclear weapon states should be pressed to accept IAEA "facility-specific" safeguards on any enrichment or reprocessing facilities they possess. Such safeguards remain in force even if a state withdraws from the NPT.

NPT parties should also address the case where a party covertly violates the NPT and later claims to legally exercise its right of withdrawal—as North Korea did. The United States and other countries have recommended ways to deal with this problem, such as requiring a withdrawing state to accept intrusive IAEA inspections to determine if it is already violating the Treaty at the time of its withdrawal.

By supporting measures to prevent the abuse of the NPT's withdrawal provision, the Trump adminis-

tration could help create another barrier to a state's decision to opt for nuclear weapons.

## Conclusions

While the United States today has less leverage than it once had to influence developments in the field of non-proliferation, U.S. leadership remains indispensable, both in mobilizing broad international support for strengthening the multilateral pillars of the nonproliferation regime and in using the weight of its bilateral relationships to advance non-proliferation goals.

Bilateral engagement with China and Russia will be critical. Relations with China in the period ahead will be competitive in significant respects. But as it pursues its overall agenda with Beijing, the Trump administration should take into account the importance of preserving the potential for cooperation in

key non-proliferation areas, including constraining North Korea's nuclear and missile programs and promoting stronger enforcement of China's export controls. Similarly, although the United States and Russia are likely to have sharp differences on Ukraine and other issues, they will need to find a way to work together on Iran and nuclear security. The improved bilateral relationship that U.S. and Russian leaders have called for could facilitate such cooperation.

Preventing nuclear proliferation and nuclear terrorism may be more challenging in the years ahead than it has been for the past quarter century. But if the Trump administration gives non-proliferation the top priority it deserves in conducting its foreign and national security policies and exerts the leadership internationally that only the United States can provide, there is a very good likelihood that the success the global nuclear non-proliferation regime has enjoyed can be sustained well into the future.



## CHAPTER 1

# THE CURRENT STATE OF THE NUCLEAR NON-PROLIFERATION REGIME

Since relatively early in the nuclear age, preventing the acquisition of nuclear weapons by additional countries has been a major goal of U.S. foreign and national security policy. In July 1963, President John F. Kennedy spoke of the implications of nuclear non-proliferation: “I ask you to stop and think for a moment what it would mean to have nuclear weapons in so many hands, in the hands of countries large and small, stable and unstable, responsible and irresponsible, scattered throughout the world. There would be no rest for anyone then, no stability, no real security, and no chance of effective disarmament.”<sup>3</sup>

Every U.S. president following JFK made nuclear non-proliferation a central principle of his approach to international affairs. Although a distinct minority of American strategists have questioned the value of arresting the spread of nuclear weapons<sup>4</sup> and other observers have suggested that further proliferation is inevitable and stopping it is futile,<sup>5</sup> there has been a strong bipartisan consensus that limiting the number of nuclear-armed states is a vital national interest of the United States. This consensus has been based on several firmly-held assumptions about the consequences of nuclear weapons proliferation:

- That the greater the number of countries with nuclear weapons, the higher the probability

that they will be used—whether intentionally, without appropriate authorization, or by accident—and that the victim of such use could be the United States, its allies or foreign security partners, or U.S. forces overseas;

- That even if new nuclear powers have no intention of actually using nuclear weapons in a conflict, they may act more aggressively in their regions in the expectation that their nuclear capability would deter regional states or the United States from intervening to counter them;
- That, by increasing the amount of weapons-usable nuclear materials worldwide as well as the number and geographic dispersion of nuclear weapons and facilities for producing, handling, and storing the materials and weapons, nuclear proliferation can significantly increase the risks of nuclear terrorism; and
- That a growing number of nuclear powers could complicate and inhibit efforts to achieve further limitations and reductions in nuclear arsenals, as existing nuclear-armed states, facing potential threats from new directions, may be reluctant to reduce their own deterrent capabilities.

<sup>3</sup> “Address to the American People on the Nuclear Test Ban Treaty,” July 26, 1963, <http://carnegieendowment.org/2003/11/17/jfk-on-nuclear-weapons-and-non-proliferation-pub-14652>.

<sup>4</sup> “The measured and selective spread of nuclear weapons does not run against our interests and can increase the security of some states at a price they can afford to pay.” Kenneth Waltz, “The Spread of Nuclear Weapons: More May Be Better,” *International Institute for Strategic Studies*, 1981, <https://www.mtholyoke.edu/acad/intrel/waltz1.htm>.

<sup>5</sup> In his confirmation hearing before the Senate Armed Services Committee on January 11, 2001, nominee for Secretary of Defense Donald Rumsfeld stated: “I do not believe it is possible to stop the proliferation of things we don’t want proliferated. I think we ought to try and we ought to work hard at it, but the reality is today that in this relaxed environment and so much available on the internet and so many people willing to sell almost anything for a price, that we have to learn to live in that world.”

These traditional concerns about the consequences of further nuclear proliferation have not diminished in recent years. If anything, they have increased. The implications of North Korea's acquisition of nuclear weapons—including nuclear saber-rattling by a seemingly impulsive and belligerent leader, fear of North Korean provocations at the conventional level, increased incentives for Pyongyang's neighbors to consider matching its nuclear capability, and concern about "loose nukes" in the event of instability in the country—demonstrate the continuing importance of nuclear non-proliferation as a U.S. national security priority.

## The global nuclear non-proliferation regime

The cornerstone of the international effort to prevent the spread of nuclear weapons is the 1970 Nuclear Non-Proliferation Treaty (NPT), which obligates non-nuclear weapon state (NNWS) parties not to acquire nuclear weapons, assures NNWS parties that they can benefit from the peaceful uses of nuclear energy, and requires that its five nuclear weapon state (NWS) parties (China, France, Russia, the United Kingdom, and the United States) pursue efforts in good faith to achieve nuclear disarmament.

Early on, it was recognized that, while the NPT was the essential legal foundation for the effort to prevent nuclear proliferation, it was not sufficient by itself to cope with the complex and evolving challenge of impeding the spread of nuclear capabilities. It was also recognized that, given the delicate balance of commitments reached in the original NPT negotiations and the controversy that would surely surround any attempt to tinker with that balance, it would not be feasible to amend the treaty. And so, the NPT has remained unchanged, but it has been supplemented over the years by a wide range of agreements, institutions, and other arrangements—formal and informal, national and multilateral—that expand and

strengthen the non-proliferation effort and collectively constitute the global non-proliferation regime.

Among the numerous and varied components of the regime are the "safeguards" (or monitoring) system of the International Atomic Energy Agency (IAEA), the export controls of the 48-nation Nuclear Suppliers Group (NSG), the United Nations Security Council and its country-specific (e.g., North Korea, Iran) and universally-applicable (e.g., resolution 1540) resolutions, regional nuclear-weapons-free zones, nuclear security-related instruments (e.g., the Convention on the Physical Protection of Nuclear Material) and forums (e.g., the Nuclear Security Summits), the Proliferation Security Initiative (PSI) to thwart illicit transfers, and a host of U.S. national laws and policies regarding export controls, sanctions, civil nuclear cooperation with other states, and security assurances to U.S. allies and other security partners.

## The non-proliferation regime's positive record

From time to time, knowledgeable observers of the international scene have predicted the rapid growth of the number of countries possessing nuclear weapons. In a secret memorandum in February 1963, U.S. Secretary of Defense Robert McNamara wrote that eight additional countries might acquire nuclear arms by 1973.<sup>6</sup> McNamara's memo was the basis for President Kennedy's oft-quoted prediction that 15 to 25 states might acquire nuclear weapons by the 1970s. In 2004, a U.N. High-Level Panel warned: "We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation."<sup>7</sup>

These pessimistic predictions never materialized. By almost any standard, the global nuclear non-proliferation regime, as it has expanded and evolved since the NPT's entry into force in 1970, has been extraordinarily successful.

<sup>6</sup> Peter Lavoy, "Predicting Nuclear Proliferation: A Declassified Documentary Record," *Strategic Insights*, vol. III, 1 (January 2004), p. 1.

<sup>7</sup> High-level Panel on Threats, Challenges and Change, "A More Secure World, Our Shared Responsibility," *United Nations*, December 2, 2004, p. 39.

- Today there are nine countries with nuclear weapons (the five NPT NWS, India, Israel, Pakistan, and North Korea), far fewer than JFK feared. Not a single country has obtained nuclear weapons in the roughly 25 years since North Korea achieved its capability.
- The NPT currently has 190 parties. Only India, Israel, North Korea, Pakistan, and South Sudan are not members. The NPT's near-universality was not always a given. In 1975, at the time of the first NPT Review Conference, there were only 90 parties. Argentina, Brazil, China, France, Japan, South Africa, Spain, and Switzerland were among the states that had not yet adhered.
- Today's NPT non-nuclear weapon states include several that once embarked on but later voluntarily abandoned nuclear weapons development programs (Argentina, Brazil, Egypt); several that pursued nuclear weapons but were compelled by diplomatic pressure or military force to give up the quest (Iraq, Libya, South Korea, Syria); three that had nuclear weapons on their territory when the Soviet Union collapsed but agreed to give them up (Belarus, Kazakhstan, Ukraine); and one that actually built a small number of nuclear weapons but unilaterally eliminated them (South Africa).
- At present, according to U.S. government sources, no NNWSs are believed to be pursuing nuclear weapons.
- With respect to uranium enrichment and plutonium reprocessing facilities (referred to as "fuel cycle" facilities), which are "dual-use" facilities that can be used to produce fuel for civil nuclear reactors but can also provide the capacity to produce fissile materials for use in nuclear weapons, only a small number of NNWSs have large-scale fuel cycle facilities (Germany, Japan, Netherlands), have developed fuel cycle capabilities

but either operate their facilities on a small scale (Argentina, Brazil) or no longer possess operational facilities (South Africa), or do not possess fuel cycle capabilities but are actively interested in them (South Korea).

With the United States often playing a leading role, the global nuclear non-proliferation regime has been substantially strengthened in recent years.

### ***Enhanced IAEA safeguards***

Adherence by 129 states<sup>8</sup> to the Additional Protocol (AP) to their safeguards agreements with the IAEA has given the agency much stronger verification tools, including access to undeclared sites and to more detailed information about the state's nuclear program and nuclear-related trade. The Additional Protocol, together with advanced monitoring technologies, such as environmental sampling and online remote monitoring, as well as effective analytic methods, such as the "state-level concept," have significantly enhanced the IAEA's ability to detect clandestine efforts to acquire nuclear weapons.

### ***Tighter export controls***

National and multilateral export controls have become a major impediment to the procurement of materials, equipment, and technology that could be used in a nuclear weapons program. U.N. Security Council resolution 1540, which obligates all states to implement effective non-proliferation controls, gave impetus to the development and tightening of national systems for controlling nuclear exports, including in states that are important transit and transshipment hubs. The United States, European Union, Japan, South Korea, and others have provided training, equipment, and other assistance to help countries build their export control capacities, including appropriate legal and regulatory frameworks, licensing and enforcement mechanisms, and industry outreach programs.

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<sup>8</sup> As of December 2016, 129 states had brought into force the Additional Protocol. 17 states have signed the Additional Protocol but have yet to bring it into force. International Atomic Energy Agency, "Additional Protocol," <https://www.iaea.org/topics/additional-protocol>.

Multilaterally, the 48-nation Nuclear Suppliers Group has agreed on common export control guidelines for its members and made it difficult for illicit procurement networks to obtain proliferation-sensitive items from the technologically advanced supplier states in the group, especially items on the group's nuclear and dual-use control lists.

### ***Active interdiction efforts***

The U.S. government has made a major effort to stop illicit proliferation-sensitive international transactions, both at the stage when such transactions are being negotiated and when shipments are underway. When the United States obtains actionable intelligence about illicit transfers, it reaches out to governments in a position to prevent the transfer, whether because a firm or broker in their country is engaged in the transaction, an illicit shipment is departing from or transiting one of their ports or airfields, or a vessel sailing under their national flag is carrying illicit cargo. Such ad hoc cooperation between the United States and foreign governments has often been successful in interdicting potentially dangerous transfers, especially in cases where U.N. Security Council resolutions have mandated that states cooperate to stop illicit, proliferation-related transfers (as they have with respect to illicit trade involving North Korea and Iran).

In addition to Washington's proactive interdiction efforts, over 100 countries participate in the Proliferation Security Initiative, which facilitates international cooperation in interdicting illicit transfers, including by establishing communication channels, conducting exercises, and sharing information.

### ***Strengthened nuclear security measures***

Preventing terrorists and other non-state actors from acquiring nuclear weapons-usable nuclear materials and nuclear weapons was not a major focus of early non-proliferation efforts. But "loose nuke" fears associated with the collapse of the Soviet Union and post-9/11 concerns about WMD terrorism have sharply elevated the importance of nuclear secu-

rity on the global non-proliferation agenda, and enormous progress has been made in the past quarter century. Many of those gains have been made through U.S. cooperation with Russia, including the down-blending and sale to the United States of 500 tons of highly enriched uranium (HEU) from Soviet-era nuclear weapons for use in reactor fuel, physical security upgrades at over 150 Russian nuclear weapons and material storage sites, and the provision of radiation detectors at numerous Russian border crossings to detect nuclear smuggling.

Much progress has also been made worldwide, with dozens of countries eliminating weapons-usable nuclear materials from their territory, the conversion in over 30 states of HEU-fueled research reactors to operate with low-enriched uranium (LEU) fuel that cannot be used in nuclear weapons, and the entry into force of the 2005 amendment to the Convention on the Physical Protection of Nuclear Material, which extends the convention's coverage to domestic nuclear material. The IAEA's nuclear security role, including its peer review missions, has been greatly enhanced. The Global Initiative to Combat Nuclear Terrorism (GICNT), a multilateral partnership co-chaired by the United States and Russia, has helped build the capacity of its members to prevent, detect, and respond to acts of nuclear terrorism. From 2010 to 2016, a series of four Nuclear Security Summits, initiated and twice hosted by the United States, gave a huge boost to the nuclear security agenda, raising global awareness of the challenge and catalyzing numerous tangible actions and commitments by individual states and groups of states to strengthen nuclear security.

### ***A deal to head off Iran's nuclear ambitions***

An important step to prevent nuclear proliferation was taken in July 2015, when the P5+1 countries (China, France, Russia, the United Kingdom, and the United States, plus Germany) reached agreement with Iran on the Joint Comprehensive Plan of Action (JCPOA), which sharply reduced Tehran's nuclear capacity and, if implemented faithfully, will effectively block its ability to produce fissile material for nuclear weapons for a least 10 to 15 years.

The JCPOA also calls for highly intrusive IAEA monitoring measures, many of unlimited duration, which can provide confidence in Iranian compliance and ensure timely warning if Iran were to violate the agreement and move in a “breakout” scenario to the production of nuclear weapons. In exchange, the JCPOA requires the suspension and eventual termination of all U.S., European, and U.N. Security Council nuclear-related sanctions against Iran. By eliminating the threat of a nuclear-armed Iran, at least in the near term, the JCPOA has reduced pressures on Iran’s Middle East rivals to embark on their own nuclear weapons programs or at least to hedge their bets and become latent nuclear powers by pursuing enrichment or reprocessing capabilities.

### ***Progress in nuclear disarmament***

Consistent with their NPT Article VI obligation to pursue nuclear disarmament, the United States and Russia have made major progress in limiting and reducing their nuclear arsenals, most recently with New START, which requires them by 2018 to limit their deployed strategic warheads to no more than 1550. From a Cold War peak of over 30,000 nuclear weapons, the U.S. inventory now stands at just above 4000.<sup>9</sup> Moreover, under both Republican and Democratic administrations, the role of nuclear weapons in U.S. national security strategy has declined, as missile defenses and conventionally-armed, precision-guided missiles have assumed greater importance in deterring attacks against the United States and its allies and security partners. In the 2010 Nuclear Posture Review, the Obama administration pledged that the United States would only consider the use of nuclear weapons in “extreme circumstances” to defend the vital interests of the United States and its allies and partners and that it would not use or threaten to use nuclear weapons against non-nuclear weapon states in compliance with their NPT obligations.<sup>10</sup>

## **But warning signs for the future**

So, despite pessimistic forecasts about the spread of nuclear weapons to more and more states, and even to terrorist groups, the global non-proliferation regime has proven to be effective and resilient. As the proliferation threat has evolved and grown, the regime has adapted to meet the challenge. At present, no defections from the ranks of non-nuclear weapon states appear likely. Indeed, the success of the regime to date, especially the absence of new nuclear weapons powers in the last 25 years, might reasonably give rise to speculation that we have seen the end of proliferation—that the number of nuclear-armed states will remain capped at single digits.

But recent international developments and trends suggest that such an optimistic assessment may be premature and that the continued success of the global non-proliferation regime cannot be taken for granted. There are several warning signs.

### ***An unstable international environment***

A stable, predictable international security environment is supportive of non-proliferation; governments are less likely under such conditions to reconsider their fundamental security choices. But today’s international environment is characterized by instability and uncertainty. Russia’s aggression in Ukraine and revisionist international agenda, China’s unlawful maritime claims and regional assertiveness, and North Korea’s provocative behavior and defiance of the U.N. Security Council all challenge the status quo and the rules-based international order. The Middle East is consumed by chaos—fueled by sectarian hatred, the emergence of powerful non-state extremist groups and militias, the breakdown of state authority, and Iran’s efforts to expand its regional influence. In such a turbulent environment, non-nuclear weapon states that feel especially exposed may

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<sup>9</sup> In his speech at the Carnegie Endowment on January 11, 2017, Vice President Joe Biden stated that the U.S. nuclear weapons stockpile had been reduced to 4018 warheads. “Remarks by the Vice President on Nuclear Security,” January 11, 2017, <https://obamawhitehouse.archives.gov/the-press-office/2017/01/12/remarks-vice-president-nuclear-security>.

<sup>10</sup> Department of Defense, “Nuclear Posture Review Report,” April 2010, [https://www.defense.gov/Portals/1/features/defenseReviews/NPR/2010\\_Nuclear\\_Posture\\_Review\\_Report.pdf](https://www.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf).



ask themselves whether their security will continue to be served by nuclear forbearance.

### ***A growing North Korean threat***

North Korea's accelerated nuclear and missile programs pose an immediate threat to the global non-proliferation regime. Efforts by the international community, including both Republican and Democratic U.S. administrations, have failed to stop and reverse those programs. The Pyongyang regime seems intent on expanding and gaining international acceptance of its nuclear capability. It is currently assessed to be able to strike South Korea, Japan, and U.S. facilities in Guam with nuclear-armed missiles, and in a few years will probably be able to attack the continental United States with such missiles. In his New Year's message, Kim Jong Un claimed that North Korea was in the final stage of preparations for flight testing a nuclear-capable intercontinental ballistic missile (ICBM).<sup>11</sup>

The DPRK's ability to violate and later withdraw from the NPT and then build a substantial nuclear arsenal with impunity would be a very damaging precedent for the non-proliferation regime. North Korea's belligerent actions and rhetoric and the emerging belief that its nuclear capability may now be irreversible have triggered growing interest in South Korea, and to a lesser extent in Japan, in acquiring an indigenous nuclear weapons capability.

### ***An uncertain future for the JCPOA***

In the minds of Saudi Arabia, the United Arab Emirates, Israel, and other Middle East states—as well as many American critics of the deal—the JCPOA has deferred but not prevented Iran's acquisition of nuclear weapons. That is because key JCPOA restrictions on Tehran's nuclear capacity will expire after 15 years, enabling it to ramp up its capacity to the point where, if it wished, it could produce enough fissile material for a nuclear weapon in a matter of weeks.

Moreover, given opposition to the nuclear deal in both Washington and Tehran, serious doubts exist about its longevity, raising the question of whether Iran will be free to expand its nuclear capacity and opt for nuclear weapons even before 15 years have elapsed. Therefore, although the completion of the JCPOA and Iranian compliance with it have, for now at least, reduced incentives for countries in the region to pursue their own nuclear programs, uncertainty about the future of the deal and about Iran's future nuclear intentions may motivate Saudi Arabia, and perhaps others in the region, to keep their nuclear options open.

### ***Questions about U.S. security assurances***

The continued willingness of several key U.S. allies and security partners to forgo their own nuclear weapons has depended significantly on their confidence in the reliability of U.S. security assurances. The perception has grown in recent years, justified or not, that the United States is determined to reduce its overseas military presence and scale back its security commitments to traditional friends. This is especially the case among the Sunni Arab governments, which have become increasingly concerned that the U.S. commitment to the security of the Gulf region has weakened and that Washington has not shown sufficient resolve in countering Iran's efforts to expand its influence at their expense.

To a lesser extent, this concern is held in Northeast Asia, where North Korea's provocative behavior and China's regional assertiveness have deeply troubled South Korea and Japan, both of which constantly seek tangible demonstrations that U.S. security assurances, especially with respect to its extended nuclear deterrent, remain reliable. Some members of the South Korean and Japanese security establishments are concerned that, if and when American cities become vulnerable to North Korean nuclear-armed missiles, the United States will be reluctant to come to the defense of its allies in the event of

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<sup>11</sup> Kim Jong Un, "2017 New Year's Address," published January 2, 2017, <http://www.ncnk.org/resources/news-items/kim-jong-uns-speeches-and-public-statements-1/kim-jong-uns-2017-new-years-address>.

North Korean conventional aggression or even nuclear attack.

### ***Downturn in U.S. relations with Russia and China***

Another problematic development affecting the global non-proliferation regime is the deterioration of U.S. bilateral relations with Russia and China. As veto-wielding members of the U.N. Security Council, NPT nuclear weapon states, leading members of the IAEA Board of Governors, major sources of nuclear equipment and technology, and longstanding friends of countries of proliferation concern (particularly North Korea, Iran, and Syria), Moscow and Beijing are critical players in the area of non-proliferation. The cooperation of one or both of them is essential to the resolution of most non-proliferation challenges, but the downturn in their relations with the United States can adversely affect prospects for such cooperation.

Although Russia continues to play a constructive role on the Iran nuclear issue, it has ended its nuclear security collaboration with Washington and many channels of communication between the two governments were closed by the Obama administration in the aftermath of Russia's aggression against Ukraine. And while U.S.-Chinese cooperation is critical on North Korea, bilateral tensions—including over U.S. deployment of the Terminal High-Altitude Area Defense (THAAD) missile defense system in South Korea, China's assertions of sovereignty and military construction in the South China Sea, and even trade—can become a serious impediment.

### ***Increased burdens on the IAEA***

The demands placed on the IAEA to monitor civil nuclear programs worldwide and detect covert efforts to develop nuclear weapons have grown faster than the resources available to the agency to meet those demands, raising questions about its future

effectiveness. The unprecedented monitoring tasks of the JCPOA have placed a huge financial burden on the agency—a burden that is being met for the time being largely by voluntary contributions—and have channeled talented human resources to the Iran portfolio and away from other important agency responsibilities. IAEA Deputy Director General for Safeguards Tero Varjoranta reports that “over the past five years, while the amount of nuclear material under safeguards increased by 22 percent, our budget rose by only 0.6 percent in real terms over the same period.”<sup>12</sup> There are concerns within the agency that key requirements, including training and acquisition of verification technology, are underfunded.

Moreover, while the Additional Protocol greatly strengthens the IAEA's verification toolkit, many countries with significant nuclear plans or programs, including Argentina, Brazil, Egypt, and Saudi Arabia, have not adhered to it. Some advanced monitoring technologies, such as wide-area environmental sampling, have not yet been proven or put into practice, and important inspections authorities, such as the “special inspections” procedure provided for under the agency's Comprehensive Safeguards Agreements, have not been fully utilized. A worrisome trend, especially for a technical organization that traditionally operated by consensus, is the increasing politicization of the IAEA Board of Governors, where, for example, Russia has raised objections to agency analytic methods, particularly the state-level concept, on the grounds that it relies too heavily on what Moscow claims are biased Western intelligence sources rather than on traditional agency safeguards.

### ***A more formidable illicit procurement challenge***

Although national and multilateral export controls and U.S.-led interdiction efforts have clearly impeded transfers of nuclear-related equipment, materials, and technology, the nature of proliferation

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<sup>12</sup> Vincent Fournier, “Delivering Effective Safeguards Needs Agility to Align Science, Technology, Policy and Culture, Says Tero Varjoranta”, *IAEA Office of Public Information and Communication*, 1 August 2016, <https://www.iaea.org/newscenter/news/delivering-effective-safeguards-needs-agility-to-align-science-technology-policy-and-culture-says-tero-varjoranta-head-of-the-iaea-department-of-safeguards>.

procurement has changed and procurement networks have become more resourceful. Today, traffickers rarely seek specialized nuclear items that appear on nuclear controls lists and are readily identifiable as intended for a nuclear program, whether civil or military. Instead, they seek items—often components or subcomponents—that are much harder to identify and control: dual-use items on control lists, dual-use items not found on control lists that can nonetheless contribute to a nuclear program, and items just below the performance threshold at which they would be controlled. Countries of proliferation concern have developed the expertise and managerial skill to integrate these various inputs into a coherent program. Today’s traffickers have also become adept at employing a wide range of deceptive techniques to avoid detection and circumvent controls, including falsified documents, cutouts, front companies, transshipment through third countries, the use of diplomatic cover to smuggle items or transfer cash, and so on.

### ***Uneven Chinese controls***

Illicit procurement networks look for weak links among potential sources of supply, and today they frequently target China. Beijing has put in place a comprehensive national export control system, but has not devoted sufficient resources or priority to making it truly effective, especially given the explosive growth in privately-owned Chinese manufacturing entities. Countries of proliferation concern, including North Korea, have set up front companies and intermediaries in China, where they can either export Chinese-manufactured goods to their home countries or, falsely declaring China as the final destination, import goods to China from third countries (even the United States and Europe) and send them on to their home countries.

On the basis of intelligence information, the United States has frequently raised questionable transactions with Beijing authorities, urging the Chinese to investigate and stop any illicit transfers. At times—especially when the U.S. demarche involved nuclear transfers rather than missile or chemical trans-

fers—the Chinese have looked into the U.S.-supplied information and stopped the transactions if they contravened Chinese export controls. At other times, however, they have been unresponsive, claiming the U.S. information was inaccurate or insufficient to conduct an investigation. China’s export control record remains uneven.

### ***Inconsistency by transit/transshipment states***

Transit and transshipment states whose port facilities depend heavily on international commerce typically resist stronger controls, fearing that the additional time and expense of implementing them will drive business to their competitors. Nonetheless, at U.S. urging and with U.S. assistance, several major transit and transshipment states of the Middle East and Southeast Asia have put respectable trade controls in place. Enforcing those controls, however, is a function of political will, which is sometimes lacking. Singapore, for example, has a capable control system but is often reluctant to take legal action against traffickers and seize cargoes even when illicit shipments have been discovered in its port, citing the absence of sufficient legal authority, the need for judicial review, or the difficulty of demonstrating the applicability of “catch-all controls.” States may also be unwilling to identify publicly or take action against illicit shipments for fear of offending, and complicating bilateral relations with, the country of origin, especially if it is China.

In general, transit and transshipment states have made significant progress in recent years in adopting and implementing trade controls. But the records vary. The United Arab Emirates, which in the past was a major conduit for goods destined for Iran’s WMD and missile programs, has become a committed and proactive implementer of strategic trade controls, in large part due to Abu Dhabi’s concern about the Iranian threat. Singapore and Malaysia, with strong commercial stakes in the viability of their ports, often require energetic U.S. coaxing to enforce their controls effectively. And Turkey, which is both a direct source of sensitive items as well as a commercial hub, has a long way to go, both in

putting credible controls in place and implementing them conscientiously.

### ***Dependence on U.S. intelligence***

Detecting proliferation-sensitive cargoes can be like finding a needle in a haystack, especially when such cargoes are loaded on huge container ships at busy ports. Radiation detection equipment can sometimes be effective in screening for nuclear materials, but not for non-nuclear equipment and materials that illicit procurement networks usually seek for their nuclear programs. The difficulty of detecting illicit proliferation-sensitive cargoes is why most successful interdictions either take place at the transaction stage or are the result not of routine screening procedures but of “tip-offs” to national authorities by the United States based on intelligence information that illicit goods are on board. But such information, especially information that is sufficiently specific and timely to be actionable and not too sensitive to share, will often not be available, which is another reason why thwarting illicit nuclear-related transfers, notwithstanding advances in export controls and interdiction cooperation, is so challenging.

### ***Worldwide growth of civil nuclear programs***

Although the Fukushima Dai-ichi nuclear disaster put the anticipated global “nuclear renaissance” on hold, as existing reactor operators, regulators, and nuclear energy planners reviewed the safety of current and future power reactors, there is now renewed interest in proceeding with reactor plans—not as great as before the Japanese disaster, but still substantial. While the bulk of new reactor construction will take place in China and India, countries in various regions of the world are planning to construct or are already constructing their first power reactors, including Bangladesh, Egypt, Indonesia, Jordan, Saudi Arabia, Thailand, Turkey, and the United Arab Emirates. In September 2016, IAEA Director General Yukiya Amano said that “today some 30 de-

veloping countries are considering introducing nuclear power.”<sup>13</sup>

Although power reactors themselves are not a serious proliferation threat, they can provide a pretext for countries harboring nuclear weapons ambitions to acquire enrichment or reprocessing capabilities, ostensibly to produce civil reactor fuel (the pretext used by Iran), even though states with small nuclear power programs have no convincing practical need to acquire such fuel cycle facilities. At present, none of the states newly embarking on nuclear power programs have indicated that they plan to acquire enrichment or reprocessing capabilities. Still, many states are reluctant to commit themselves to forgo fuel cycle capabilities, insisting on preserving their right under the NPT to pursue such technologies for peaceful purposes, even if they have no current intention to do so.

### ***More work to do on nuclear security***

Although much progress has been made since the end of the Cold War in reducing, consolidating, and securing potentially vulnerable weapons-usable nuclear materials and preventing their seizure by terrorists or other non-state actors, the job is far from done. The termination of U.S.-Russian nuclear security cooperation—the result both of souring bilateral relations and Moscow’s resentment of the intrusiveness and donor-recipient optic of the U.S.-funded cooperative threat reduction programs—was a serious setback. While Russian authorities claim they can secure their materials and facilities on their own, American experts have doubts that Moscow has either the resolve or the financial resources to take care of unfinished business.

Worldwide, despite impressive strides taken in the course of the Nuclear Security Summit process and earlier, many research reactors continue to be fueled by HEU or use HEU targets for isotope production, and many countries continue to retain weapons-us-

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<sup>13</sup> Yukiya Amano, “Statement to Sixtieth Regular Session of IAEA General Conference 2016,” September 26, 2016, <https://www.iaea.org/newscenter/statements/statement-to-sixtieth-regular-session-of-iaea-general-conference-2016>.

able nuclear materials. The entry into force of the 2005 amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM) was an important step. However, the CPPNM simply obligates parties to implement security standards but does not specify what those standards should be, and neither the CPPNM nor other international efforts to strengthen nuclear security, including the 2011 revision of the IAEA's physical protection recommendations, cover the roughly 83 percent of global stocks of fissile material contained in military programs.<sup>14</sup> The threat of theft or seizure, moreover, has not gone away, with the IAEA reporting on 16 seizures of weapons-usable nuclear material between 1993 and 2014.<sup>15</sup> Former deputy administrator of the National Nuclear Security Administration Will Tobey maintained in September 2016 that “nuclear security progress is slowing, budgets are declining, and important projects remain undone.”<sup>16</sup>

### ***Nuclear arms control stalled***

The optimism of President Obama's April 2009 Prague speech, in which he declared the goal of a world without nuclear weapons, is gone. The United States and Russia are likely to fulfill their New START commitments to have no more than 1550 deployed strategic warheads on no more than 700 deployed ICBMs, submarine-launched ballistic missiles (SLBM), and nuclear-capable bombers by February 2018. But given the sharp decline in U.S.-Russian relations and Moscow's unwillingness to consider further nuclear reductions unless non-nuclear strategic systems (e.g., missile defenses, conventional prompt global strike missiles) and third-party nuclear forces are taken into account, there is little expectation that, at least in the near and perhaps even medium terms, there will be further progress in the bilateral nuclear arms reduction agenda.

Indeed, with pressures in Washington to respond to what is widely seen as Russia's robust nuclear modernization programs, provocative nuclear-related exercises and rhetoric, increased readiness to initiate the use of nuclear weapons in a conventional conflict, and, in general, enhanced reliance on nuclear weapons in its national security strategy, there is growing concern that the two powers are headed toward a renewed nuclear arms race. This concern is reinforced by the U.S. belief that Russia has violated the bilateral INF Treaty and by Moscow's counter-accusation of U.S. INF violations.

Pessimism regarding the U.S.-Russia nuclear agenda is matched by stagnation in multilateral nuclear arms control. Entry into force of the 1996 Comprehensive Nuclear Test Ban Treaty remains a remote prospect, the long-delayed start of negotiations on a Fissile Material Cutoff Treaty remains elusive, and China, Pakistan, and India—the three nuclear-armed states most actively building up their nuclear arsenals—have showed little interest in accepting constraints on their capabilities.

### ***NPT polarization and the ban treaty movement***

Ever since the NPT entered into force, its parties have been divided between the nuclear weapon states (joined usually by non-nuclear weapon states under their nuclear umbrella) and non-nuclear weapon states (especially members of the Non-Aligned Movement, or NAM), with the NNWSs demanding more rapid implementation of the Article VI obligation to pursue nuclear disarmament. In recent years, frustrated by what they regarded as the inadequate pace of disarmament, NNWS activists, including Austria, Brazil, Ireland, Mexico, Nigeria, and South Africa, sought first to highlight the humanitarian consequences of nuclear use and later to press for a multilateral legal instrument to prohibit

<sup>14</sup> Matthew Bunn, Martin B. Malin, Nickolas Roth, William H. Tobey, *Preventing Nuclear Terrorism: Continuous Improvement or Dangerous Decline?* Belfer Center for Science and International Affairs, March 2016, p. 35.

<sup>15</sup> *Ibid.*, pp. 24-25.

<sup>16</sup> William Tobey, *Descending from the Summit: The Path toward Nuclear Security 2010-2016 and Beyond*, The Stanley Foundation, Policy Analysis Brief, September 2016, p.10.



nuclear weapons. These efforts culminated in the adoption of a 2016 U.N. General Assembly resolution calling for negotiations to begin in March 2017 on a legally binding treaty to ban nuclear weapons, leading toward their complete elimination.<sup>17</sup>

Proponents claim that the ban treaty will spur implementation of Article VI, hasten the elimination of nuclear weapons, and therefore complement and strengthen the NPT. Opponents, which include all the NPT NWSs and many of the so-called “umbrella states,” argue that the only realistic way to make progress on disarmament is through a step-by-step process as international conditions permit. They contend that a ban treaty would delegitimize nuclear deterrence, which many states still rely upon for their security. And they claim that a ban treaty, by establishing what would be seen as an alternative to the NPT with possibly divergent provisions, would at best be confusing and at worst would undermine support for the NPT and provide an excuse for resisting further measures to strengthen barriers to proliferation. The acrimonious debate on the ban treaty is likely to continue for quite some time, deepen the polarization that has plagued the NPT in recent years, and increase the difficulty of pursuing practical steps to reinforce the global non-proliferation regime.

So, the Trump administration will be dealing with a global nuclear non-proliferation regime that has so far been remarkably stable and successful. But given the worrisome developments and trends discussed here, the continued success of international efforts to halt the spread of nuclear weapons cannot be taken for granted. Sustaining the regime for the long term will require the United States to address and overcome a range of formidable challenges, which are discussed in the following chapters.

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<sup>17</sup> UN General Assembly, Resolution 71/258, “Taking Forward Multilateral Nuclear Disarmament Negotiations,” January 11, 2017, [http://www.un.org/en/ga/search/view\\_doc.asp?symbol=A/RES/71/258](http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/71/258).

## CHAPTER 2

# DEALING WITH NORTH KOREA'S NUCLEAR AND MISSILE CAPABILITIES

Addressing the threat posed by North Korea should be one of the top national security priorities of the Trump administration. The North Korean regime has long argued that, given what it calls U.S. “hostile policy,” it has no choice but to acquire a powerful nuclear deterrent. Under Kim Jong Un, that effort has accelerated, with a succession of nuclear and long-range missile tests. North Korea is pursuing mobile land-based missiles and submarine-based ballistic missiles in the hope of achieving the ability to survive a pre-emptive attack and launch retaliatory nuclear strikes. U.S. and South Korean experts believe North Korea already can attack the ROK, Japan, and U.S. facilities in Guam with nuclear-tipped missiles, and Pyongyang appears determined to obtain the capability to strike the continental United States with nuclear weapons, a capability that experts believe may be two to five years away.<sup>18</sup>

Kim Jong Un presumably believes the ability to strike U.S. allies, U.S. forces in East Asia, and eventually the U.S. homeland will deter the United States from attacking North Korea, attempting to bring down his regime, or implementing plans to augment U.S. military forces on the Korean Peninsula in the event of armed conflict. Whether the DPRK’s motivation is essentially defensive (to ensure his regime’s survival and deter attack) or offensive (to enable the DPRK to engage in conventional provocations and aggression under the umbrella of its nuclear deterrent) is the subject of speculation, although the Kim family regime’s belligerent rhetoric and actions, especially

the 2010 sinking of the ROK naval vessel Cheonan and lethal shelling of South Korea’s Yeonpyeong Island, are not reassuring in this regard.

Whatever the motivation, the prospect of North Korea with a sizable nuclear arsenal and long-range delivery systems is profoundly disturbing. It is not possible to predict whether, in a deep crisis, the DPRK’s leadership would be cautious and refrain from the use of nuclear weapons (knowing that it would result in regime-ending retaliation), whether it would initiate the use of nuclear weapons in the midst of a conventional conflict in the hope of getting the United States and its allies to back down, or whether, out of fear that its survival is threatened and it has nothing to lose, it would lash out with its nuclear capability.

The growth of North Korea’s nuclear and missile capabilities also heightens concerns that, if tightened sanctions were to put Pyongyang under tremendous economic pressure, it might sell nuclear equipment or technology, or even fissile materials or nuclear weapons, to other countries or non-state actors. The DPRK’s record on nuclear exports is not quite as bad as is widely believed. Although North Korea has been unrestrained in its use of missile-related exports to earn hard currency, it is believed to have engaged in nuclear transfers only twice—uranium hexafluoride to Libya and the construction of a plutonium production reactor in Syria. Still, given increased concerns about nuclear terrorism and the possibility that growing inventories of nuclear materials and

<sup>18</sup> Chang Jae-soon, “N. Korea will likely be Trump’s 9/11: Victor Cha,” Yonhap News Agency, December 2, 2016, <http://english.yonhapnews.co.kr/national/2016/12/02/52/0301000000AEN20161202000400315F.html>.

weapons might increase Pyongyang's readiness to sell nuclear items, the threat of outward proliferation from the DPRK needs to be taken seriously.

## A persistent challenge

Donald Trump will be the fifth American president to address the North Korean nuclear challenge. The first four tried a variety of approaches, including sanctions, engagement, and strategic patience. Sanctions put additional pressure on Pyongyang but did not fundamentally change its behavior. Negotiations succeeded at times in slowing and temporarily pausing its strategic programs but did not stop them. And the DPRK responded to patience by stepping up the pace of those programs.

The North Korea challenge has only become more difficult in recent years. Several factors increase the odds against an acceptable solution.

- China is not willing to apply decisive pressure against Pyongyang. Beijing genuinely does not want North Korea to have nuclear weapons, and it has become increasingly angry at the DPRK for pursuing its nuclear and missile programs in defiance of Chinese appeals for restraint. Beijing has worked with the United States in adopting U.N. Security Council resolutions 2270 and 2321, both of which significantly strengthened anti-DPRK sanctions, including by imposing a limit on DPRK coal exports. On February 17, the Chinese Commerce Ministry announced that China would suspend all coal imports from the DPRK for the remainder of the year.<sup>19</sup> But even though North Korea remains heavily dependent on China for its basic needs, Beijing is unwilling to exert all the leverage at its disposal for fear of triggering instability in North Korea that could lead to the collapse of the regime, re-

unification with the ROK, and the end of the DPRK as a buffer against the United States.

- North Korea appears more determined than ever to hold onto its nuclear weapons. To Kim Jong Un, they are essential to the regime's survival—as a military deterrent to the regime's enemies, as a source of domestic political legitimacy for a regime that has few if any other sources of legitimacy, and as a means of consolidating and maintaining the military's support for his leadership. While nuclear weapons might previously have been bargaining chips, now that the regime has made huge sacrifices over many years to acquire a substantial nuclear arsenal, they may well have become a permanent fixture. Director of National Intelligence James Clapper recently said that the complete denuclearization of North Korea is now a “lost cause.”<sup>20</sup>
- North Korea may have a greater ability today to withstand international pressures. As a regime with relatively small material needs, little concern about being isolated from the international community, and a readiness to put its people through great hardships, North Korea has never been easy to pressure. With its economy substantially strengthened in recent years due to the relaxation of some government controls on private economic activity, the DPRK may now be even less vulnerable to foreign pressures.
- The military option for resolving the North Korea nuclear issue has become much riskier. Even when North Korea had only an embryonic and essentially undeliverable nuclear capability, a pre-emptive attack against the DPRK nuclear program would have run the risk of triggering massive North Korean conventional artillery and rocket strikes against Seoul. Now that the DPRK has produced a substantial number of

<sup>19</sup> Simon Denyer, “China suspends North Korean coal imports, striking at the regime’s financial lifeline,” *The Washington Post*, February 18, 2017, [https://www.washingtonpost.com/world/china-suspends-north-koreas-coal-imports-striking-at-regimes-financial-lifeline/2017/02/18/8390b0e6-f5df-11e6-a9b0-ecee7ce475fc\\_story.html?utm\\_term=.b0eacda92863](https://www.washingtonpost.com/world/china-suspends-north-koreas-coal-imports-striking-at-regimes-financial-lifeline/2017/02/18/8390b0e6-f5df-11e6-a9b0-ecee7ce475fc_story.html?utm_term=.b0eacda92863).

<sup>20</sup> Rick Gladstone, “‘North Korea Giving Up Nuclear Arms ‘a Lost Cause,’ Official Says,” *The New York Times*, October 25, 2016, <https://www.nytimes.com/2016/10/26/world/asia/north-korea-james-clapper.html>.

nuclear weapons and missile delivery systems and dispersed and hidden them to ensure their ability to survive a pre-emptive attack, the risks of retaliation have increased enormously.

## Options for dealing with North Korea

Theoretically, there is a wide spectrum of options from which the Trump administration can choose, ranging from military pre-emption on one end, to setting aside the nuclear issue, engaging the North economically, and hoping to tackle the nuclear issue in the future under better conditions on the other end. But as indicated above, the military option is too risky, and a related but less risky option—active efforts to undermine and replace the Kim regime—also has little chance of success, given Kim Jong Un’s consolidation of power and China’s likely determination to thwart any U.S. policy of regime change. At the other end of the spectrum, building a less confrontational relationship with Pyongyang in the expectation that it will facilitate nuclear negotiations in the future is unlikely to succeed either, as the DPRK could be expected to pocket near-term concessions without any intention of returning to the nuclear issue.

There are really only two feasible options. They have much in common, including the need to enlist China’s support for bringing more pressure to bear on North Korea and the need to work closely with South Korea and Japan to strengthen allied military capabilities to deter and defend against North Korean aggression. The critical difference is that the first option does not involve negotiations with Pyongyang over its nuclear and missile capabilities, and the second does.

### ***Option one: Pressure and containment***

Under the first option, the overriding priority would be to ramp up pressure against North Korea, including by rigorously enforcing existing sanctions and imposing new ones, curtailing its hard currency earnings (e.g., remittances from overseas workers,

arms sales), and impeding its imports of materials and technology for its nuclear and missile programs through enhanced screening of cargoes and other interdiction measures. China would be pressed hard to provide strong support for these efforts, including with the threat of secondary sanctions against Chinese entities that facilitate North Korea’s illicit efforts. Beijing would be urged to further restrict its imports of North Korean coal and other minerals, to prevent Chinese banks and other entities from facilitating Pyongyang’s acquisition of proliferation-sensitive goods and technology, to crack down on China-based North Korean front companies and individuals engaged in illicit activities, and to conscientiously screen cargoes to and from North Korea, including at DPRK-China border crossings.

The rejection of negotiations under this option would be based on the belief that North Korea’s record of compliance with previous agreements was unsatisfactory, that the compensation it would demand for its nuclear and missile concessions would be unwarranted and politically unpalatable, that the prospect of it agreeing to complete denuclearization is exceedingly remote, and that any agreement short of complete denuclearization could be interpreted as legitimizing its possession of nuclear weapons.

While seeking to sharply increase sanctions against North Korea, the United States would also step up efforts to strengthen the capabilities of the U.S.-ROK and U.S.-Japanese alliances to deter and counter any DPRK conventional or nuclear aggression, including by bolstering regional missile defenses (including THAAD deployment in South Korea), enhancing tripartite U.S.-ROK-Japanese defense cooperation, assisting the allies to reinforce their conventional military capabilities, and reinforcing the credibility of the U.S. extended nuclear deterrent.

The goal of this first option would be to get North Korea to unilaterally curb or ideally give up its nuclear and long-range missile programs. If that does not prove achievable, then the approach would at least aim to slow down or otherwise constrain the North’s programs by impeding access to hard cur-

rency and foreign equipment and materials. But an underlying assumption of this option would be that stopping and eliminating North Korea's strategic programs in the near term, whether through negotiations or strong pressures, is unlikely and that the most realistic way of dealing with the North Korean threat is through a long-term containment policy that would deter aggression from the DPRK, reassure and protect U.S. allies, and ultimately result in the elimination of Pyongyang's threatening capabilities when the North Korean regime finally collapses or is fundamentally transformed.

This first option has several serious drawbacks.

- China would not significantly increase its pressure on North Korea to support a strategy based on pressure alone. It would regard the effort to coerce Pyongyang into making unilateral concessions as futile and potentially damaging to stability in the DPRK. Threatening or imposing secondary sanctions on the Chinese to induce them to ratchet up sanctions dramatically against Pyongyang would undermine prospects for U.S.-China cooperation on North Korea, which is essential to any favorable outcome, and could reduce the likelihood of constructive engagement on other bilateral issues, such as trade.
- The first option would probably result in continuing advances in North Korea's nuclear and missile capabilities for the foreseeable future. Especially with China unwilling to apply much stronger pressure, North Korea would reject unilateral curbs on its programs. It would conduct additional tests of nuclear weapons and long-range missiles and further expand its fissile material production capacity. It would steadily increase the size of its nuclear arsenal, improve the survivability of its arsenal against pre-emption, and, before too long, achieve the capability to strike the U.S. homeland with a nuclear payload.
- The first option would fail to achieve the support of South Korea. With a presidential election no

later than December 2017 and the impeachment or resignation of President Park Geun-hye possibly before then, a new administration will be coming to power in Seoul. If a progressive becomes president, the ROK government may be unwilling to support tough new sanctions against North Korea and would surely insist that negotiations be a key element of any strategy. Even if a conservative government takes office, one that is willing to sustain and even strengthen pressures against the DPRK, it could be expected to favor a strategy that includes negotiations, if for no other reason than that the South Korean public will strongly support such an approach.

### ***Option two: Dual-track strategy***

The defining difference of the second option is that it calls for a dual-track strategy involving both pressure and negotiations. Such a strategy would be much more likely to bring China on board. While the Chinese will be unwilling to go along with tougher sanctions in support of a "pressure only" approach, they would see merit in increasing pressure in order to provide leverage for negotiations. This was the case on the Iran nuclear issue, where Beijing was prepared to reduce its imports of Iranian crude oil by over 50 percent to give Tehran a strong incentive to negotiate seriously.

The Chinese would still not be expected to impose regime-threatening sanctions against the DPRK. But in service of a negotiating track, they would probably be willing to step up sanctions and other forms of pressure considerably. Under this second option, as under the first, Washington would want the Chinese to strictly implement Security Council mandates on restricting imports from North Korea, screening cargoes to and from the DPRK, and preventing Chinese and China-based North Korean entities from facilitating the DPRK's illicit sales and procurement activities. The United States would also warn Beijing that it would be prepared to impose sanctions on Chinese entities for failing to comply with Security Council resolutions. But in



general, the second option would be less demanding of the Chinese and less confrontational toward them than the first.

Like the first option, the second would call on the United States to work with its South Korean and Japanese allies to strengthen their collective deterrence and defense capabilities, including by increasing tripartite defense cooperation. Clearly and concretely signaling resolve to build up alliance capabilities to deal with the growing North Korean threat would be necessary not only to provide incentives for North Korea (and China) to pursue a positive negotiating outcome but also to ensure the security of the United States and its allies if negotiations fail.

While the complete denuclearization of North Korea would be the ultimate goal of negotiations, there is virtually no prospect that it could be achieved in the near term, especially given the upper limit on how far China is prepared to go in pressuring its neighbor. Negotiations should focus on the interim objective of a freeze on Pyongyang's nuclear and missile programs, which would be defined as including a ban on testing nuclear weapons and long-range missiles (including space launch vehicles), the suspension of all enrichment and reprocessing activities (including the declaration and suspension of such activities at currently covert sites outside the Yongbyon nuclear complex), and the presence of IAEA inspectors and monitoring equipment to verify the freeze. For the time being, North Korea would not have to give up nuclear weapons and materials already produced, but the agreement would contain a commitment to continue efforts to achieve complete denuclearization, albeit without specifying a deadline or time-frame.

The North Koreans have never accepted limitations without seeking compensation, and they would undoubtedly demand compensation in exchange for a freeze. They might ask for the conclusion of a peace treaty to replace the 1953 Korean War armistice, the end of U.N. and U.S. sanctions, the normalization of U.S.-DPRK relations, the termination or scaling back of U.S.-ROK joint military exercises, accep-

tance of North Korea's status as a nuclear weapon state, material assistance, or some combination of these. Most of the items on their wish list would be unacceptable. In the past, they have made exorbitant demands and fallen back to something much more modest. What they would settle for in the case of a freeze is hard to predict.

From the U.S. perspective, the limits on North Korea's nuclear and missile programs would be the centerpiece of any agreement. But in addition to whatever compensation Pyongyang would require, the deal could include other elements the U.S. and its allies might favor, such as military confidence-building measures or other conventional arms restraints. Moreover, any negotiation with the DPRK should address human rights in some fashion, perhaps in a side agreement.

Bilateral U.S.-DPRK engagement, and perhaps also bilateral ROK-DPRK engagement, would play an important role in the negotiations, although embedding bilateral talks in a multilateral framework, such as the previous Six Party Talks, could give any outcome greater international standing and facilitate implementation and enforcement.

The second option has several advantages. In particular, it is more likely than the first option to gain Chinese support and persuade Beijing to increase pressures against the DPRK. It is also more likely to have the support of the new ROK government, which is essential to the success of any strategy dealing with North Korea. And if it is successful in imposing a verifiable freeze, it could break the momentum of DPRK programs, impede Pyongyang's ability to acquire confidence in its ability to strike the United States or its allies with nuclear weapons, and reduce the difficulty and expense of pursuing military measures, including missile defenses, to deter and counter North Korean capabilities.

At the same time, the second option has several drawbacks. Given North Korea's strong attachment to its strategic programs, there is no guarantee that negotiations would succeed and, if they did, no guaran-

tee that the DPRK would comply or would not pull out of the agreement when it decides that it needs to renew its programs. Moreover, gaining domestic support for negotiating with a North Korean regime seen by the American public as untrustworthy and reprehensible would be difficult, especially if any deal were to involve compensation to North Korea that is viewed as unjustified. And any agreement achieved with the DPRK that freezes its nuclear program and puts off complete denuclearization to an unspecified future time would be criticized on the grounds that it provides de facto acceptance of Pyongyang's nuclear capability and bestows legitimacy on the North Korean regime.

It is a difficult choice. Both options involve risks. But a “pressure only” strategy stands very little chance of arresting North Korea's programs before they pose a much greater threat to the security of U.S. allies and a direct threat to the United States. And it runs the risk of alienating the two countries whose support is essential, the ROK and China. The dual-track approach provides no assurance of success. But it offers greater promise of impeding the growth of North Korea's nuclear and missile programs and gaining the crucial support of Seoul and Beijing. So the preferable course is to pursue the dual-track option, even while recognizing its uncertainties and domestic difficulties.

If it does not prove possible to negotiate an effective and verifiable freeze, or if the price insisted upon by the DPRK is too high, the Trump administration would still be able to fall back to pursuing a long-term strategy of pressure and containment. In that event, having genuinely tried to achieve a negotiated outcome but fallen short due to Pyongyang's rejection of reasonable constraints, the administration would be in a much stronger position than it is today to gain international support for the pressure needed to impede North Korean programs in the near term and to buttress a policy of containment in the longer term.

## CHAPTER 3

# BLOCKING IRAN'S PATH TO NUCLEAR WEAPONS

Another major non-proliferation challenge facing the Trump administration is ensuring that Iran's path to nuclear weapons is blocked. The JCPOA—the Obama administration's contribution to addressing the Iranian nuclear challenge—remains controversial, and one of the new administration's early orders of business in the national security area will be to figure out what to do with it.

### Iranian compliance so far

Notwithstanding the contentious and highly partisan debate that has continued to surround the JCPOA from the outset, there is broad recognition that Iran has fulfilled its commitments to sharply reduce its fissile material production capacity and that, if Iran continues to abide by those commitments, it will not be able to produce enough fissile material for nuclear weapons for at least 10 to 15 years.

This is not to say that implementation has always been smooth and problem-free. Twice the Iranians slightly exceeded the amount of heavy water permitted, but both times corrected the infractions as soon as they were identified. When ambiguities and questions of interpretation have arisen—as they inevitably do in such complex agreements—the Iranians have pushed hard to have them resolved in their favor. But the United States and its European partners have pushed back, and on a range of difficult technical issues—including how to deal with small amounts of enriched uranium embedded in waste materials or stuck in process equipment, how to

monitor the carbon fiber used in centrifuge production, and how to ensure that quantities of natural uranium imported are appropriate for intended civil uses—the parties have managed to come up with mutually acceptable, practical solutions that kept the JCPOA on track.

American officials maintain that the tendency of Iranian negotiators to constantly seek marginal implementation advantages can be tiresome and time-consuming and probably reflects both a desire to reassure domestic constituencies that they are upholding the nation's interests as well as an innate Iranian penchant for bargaining over everything. But at least so far, U.S. officials see no grounds for believing that Tehran is engaged in covert violations of the JCPOA or is planning to break out of the agreement.

This assessment is shared by the IAEA which, on the basis of the JCPOA's extensive and unprecedented monitoring arrangements, has reported several times that Iran is in compliance with its commitments. While the IAEA has apparently not yet sought inspections at military or other sensitive Iranian facilities, it has been able to conduct “complementary access” inspections at locations not subject to routine inspections, and it believes Iran is cooperating with the agency in verifying the information Tehran provided in accordance with the “provisional application” of its Additional Protocol.

American critics of the nuclear deal have focused less on Iran's compliance with its nuclear commitments than on Iranian behavior in areas not covered by the

deal, including its heavy involvement in the Syrian civil war, its assistance to Hezbollah in Syria and the Houthis in Yemen, its disregard of the Security Council's call to cease missile activities, its detention of dual nationals, its crackdown on domestic dissent, and its harassment of U.S. naval vessels. The critics argue that the JCPOA has empowered Tehran to engage in such activities and that sanctions relief has given them additional resources to do so. Although it is not possible to know whether the Iranians have pursued these provocative activities more aggressively than they would have done in the absence of the JCPOA, it is clear that any hopes that the JCPOA would moderate Iranian behavior, both externally and internally, have not materialized.

## Iranian charges of U.S. violations

Accusations of non-compliance with the JCPOA have come not from the U.S. government but from Iran. Iranian leaders from Supreme Leader Ayatollah Ali Khamenei on down complain that the United States has dragged its feet on sanctions relief and has even sought to discourage banks and business from engaging with Iran in violation of its JCPOA commitment to “make best efforts in good faith to sustain this JCPOA and to prevent interference with the realization of the full benefits by Iran of the sanctions relief.”<sup>21</sup>

Iran's accusations that Washington is violating its sanctions relief commitments are unfounded. They are motivated by disappointment that the Iranian economy has recovered from the depths of the sanctions period more slowly than the Iranian public had been led to expect, and Iran's leaders have chosen to blame the United States. But the reluctance of international financial institutions and companies to engage with Iran cannot legitimately be blamed on the U.S. record in fulfilling its sanctions relief commitments. Instead, the slower-than-hoped-for rate of recovery can be attributed to such factors as the

continued low price of oil, fear by major banks of running afoul of U.S. sanctions left in place by the JCPOA, uncertainty about whether the nuclear deal will survive elections in the United States and Iran, bureaucratic and regulatory obstacles to doing business in Iran, and unfavorable risk/reward calculations by foreigners contemplating business with Iran.<sup>22</sup>

Indeed, the Obama administration not only suspended all U.S. sanctions it was committed to suspend, but went to great lengths to ensure that Iran is not denied the benefits of sanctions relief to which it is entitled. The administration issued Treasury Department licenses to facilitate legitimate trade (e.g., to Boeing and Airbus for the sale of civilian aircraft to Iran), provided public clarifications of U.S. sanctions policy, and held meetings with major banks to explain how they can avoid transgressing U.S. sanctions that remain in place. Some Iranian officials have publicly acknowledged these efforts and admitted that Iran has much to do to get its own bureaucratic and regulatory house in order if it wishes to take full advantage of sanctions relief. But hoping to put the United States on the defensive and prompt more active U.S. efforts to encourage Western economic engagement with Iran, Tehran has continued its campaign of accusing the United States of violating its sanctions relief commitments.

Thus, for much of 2016, Iranian officials argued that extension of the Iran Sanctions Act (ISA), which was scheduled to expire at the end of the year, would violate the JCPOA and that Iran would be forced to respond. Former Secretary of State John Kerry and other senior officials countered that ISA extension would not be a violation because the administration could continue waiving, and therefore suspending, nuclear-related sanctions, as required by the JCPOA. Nonetheless, when Congress passed the extension in December and President Obama allowed it to become law without his signature, the Iranians stuck to their erroneous claim that it was inconsistent with the JCPOA. In response, Iranian President

<sup>21</sup> Joint Comprehensive Plan Of Action, July 14, 2015, paragraph 26, <https://www.state.gov/documents/organization/245317.pdf>.

<sup>22</sup> Richard Nephew, “Six Months Later: Assessing the Iran Nuclear Deal,” Center on Global Energy Policy, SIPA, Columbia University, July 2016, <http://energypolicy.columbia.edu/publications/report/six-months-later-assessing-implementation-iran-nuclear-deal>.

Hassan Rouhani directed Foreign Minister Javad Zarif to raise the alleged U.S. breach in the Joint Commission, the JCPOA's dispute resolution mechanism, and directed Atomic Energy Organization of Iran head Ali-Akbar Salehi to begin planning for the development of naval reactor fuel, which could provide a justification at some future date for pursuing weapons-grade enrichment levels.

The Iranian government is playing a risky game. It wants to preserve the benefits of the nuclear deal, and therefore its responses to ISA extension are mainly for domestic consumption and not designed to put the deal in jeopardy. Indeed, President Rouhani seems to have backed off the charge that ISA extension is a violation, admitting in a January 2017 press conference that extension is not a violation as long as the United States continues to waive sanctions. But to appease domestic audiences and in the hope of getting the United States to make further concessions on sanctions relief, Iran continues to make false charges of U.S. JCPOA violations—a tactic that weakens Iranian public support for the agreement and plays into the hands of Iranian hardliners who want to scuttle it.

## Options for the Trump administration

Although much was said about the JCPOA during the 2016 election campaign, the Trump administration will need to review the issue and decide its posture toward the nuclear deal and toward Iran more generally.

### ***Option one: Unilaterally scuttle the deal***

An option clearly available to the new administration would be to announce that it will not renew the Iran sanctions waivers when they expire in a few months. The expiration of the waivers would result in the re-imposition of the U.S. nuclear-related sanctions that the JCPOA required the United States to suspend in January 2016 and would therefore be tantamount to U.S. withdrawal from the deal.

Some observers have speculated that, in the event of U.S. withdrawal, the Iranians would continue to honor the deal and abide by their nuclear commitments in an attempt to divide the Europeans from the United States and keep European sanctions relief in place. But it is hard to imagine that Tehran would opt for that approach. It would expect that, in the wake of re-imposed, nuclear-related U.S. sanctions, a significant number of European and other foreign actors would be reluctant to engage with Iran, thereby significantly reducing Iran's main incentive for limiting its nuclear capabilities. Moreover, even if Iranian leaders calculated that many foreign enterprises would not be discouraged from engaging with Iran, it is inconceivable, from a domestic political standpoint, that any Iranian government would decide to remain bound by the deal after the United States had withdrawn.

So, under this option, the nuclear deal would simply collapse, and the onus would be on the United States. Although a few governments, including Israel and perhaps a few Gulf Arab states, would support the unilateral U.S. action, most governments, including all of America's P5+1 partners, would oppose it. Freed from the JCPOA's nuclear restrictions, Iran would start building up its nuclear capacity and shortening the time it would need to produce fissile material for nuclear weapons. And unlike in the period preceding the JCPOA, the United States would no longer be able to mobilize broad international support for the sanctions necessary to persuade the Iranians once again to stop and roll back their program.

### ***Option two: Re-negotiate the deal***

A second option would be to seek to re-negotiate the JCPOA to get more favorable terms. Among the modifications the United States might seek would be deferring for several years the expiration of key nuclear restrictions, tightening constraints on research and development of advanced centrifuges, strengthening inspection provisions, and including limits on ballistic missile activities in the agreement.



To gain leverage to induce Iran to accept such changes, the administration, supported by Congress, would ratchet up U.S. sanctions permitted by the JCPOA for non-nuclear reasons (e.g., support for terrorist groups, ballistic missile activities, human rights abuses), urge other governments to impose their own sanctions, and apply other forms of pressure. For the time being, the administration would operate within the JCPOA, but it could warn others that, if Iran were not willing to re-negotiate the deal, the United States would consider scrapping it.

The Russian and Chinese governments would strongly oppose U.S. efforts to re-negotiate the JCPOA. While America's European partners would be sympathetic to the idea of improving the deal, they are clearly content with the existing one and would not want to put it at risk by sharply stepping up pressures on Tehran in the absence of non-compliance with its commitments. European governments would neither impose their own new sanctions nor discourage European private entities from dealings with Iran that could run them afoul of the new U.S. sanctions, especially sanctions they regard as unjustified and only adopted for the purpose of creating more leverage. Indeed, some European governments would suspect a hidden U.S. agenda of provoking the Iranians to be the first to abandon the agreement.

The reactions of European and Asian private entities would be mixed toward new U.S. sanctions that increase their exposure to secondary U.S. sanctions. Some would not be deterred from engaging with Iran, perhaps because they doubt the United States would really sanction them, given their own government's opposition to the U.S. strategy. Others would hold off on doing business with Iran, either because they fear U.S. penalties or because they had been cautious about engaging with Iran even before the new U.S. sanctions.

The Iranians have already said they would oppose a U.S. initiative to re-negotiate the deal. Given the lack of support for the initiative by most governments and the likely failure of the new U.S. sanctions to

have a major inhibiting effect on private sector engagement with Iran, they would feel little pressure to accept terms more favorable to the United States. Tehran's response to new U.S. sanctions would depend on their scope and intensity. Especially if the new measures were permitted by the JCPOA and were targeted narrowly on Iran's non-nuclear activities, Iran would probably stay committed to the deal, while working hard to divide Washington from its partners and encouraging governments and private entities to ignore the U.S. sanctions.

But if the new sanctions were seen as re-imposing previously suspended sanctions by re-labeling them as non-nuclear, or if they were seen as intended to reverse the gains of sanctions relief, the Iranians could be expected to respond by accusing the United States of violating the JCPOA and retaliating in ways (e.g., scaling back implementation of its nuclear commitments) that would cause serious implementation disputes and call into question the sustainability of the agreement.

So seeking to increase pressures on the Iranians to get them to revise the deal is unlikely to result in a new negotiation, and it could cause a major rift between the United States and its partners and could well lead to the erosion and eventual demise of the agreement.

### ***Option three: Enforce the deal, counter Iran's destabilizing behavior***

A third option would involve maintaining and strictly enforcing the existing JCPOA, while actively countering provocative Iranian behavior not covered by the deal and seeking to prevent Iran from acquiring nuclear weapons after key JCPOA restrictions are scheduled to expire. Such an option would include the following elements:

- **Enforcing Iranian compliance with the JCPOA.** The United States should firmly resist any efforts by Iran to weaken or evade its nuclear commitments. When ambiguities and questions of interpretation arise in implement-

ing the deal, the administration should press for prompt, practical solutions that preserve the integrity of the deal. Although sensitive deliberations on compliance issues involving Iran and the P5+1 countries should be kept private, resolutions of such issues should generally be made public, as they were in December 2016 when several “memorializations” of agreements on implementation matters were issued as an IAEA document.<sup>23</sup> Washington should also work to maintain broad international support for re-imposing previously suspended sanctions in the event of Iranian non-compliance.

- **Countering Iranian provocations outside the JCPOA.** During the negotiations, both the United States and Iran took the position that the agreement should focus only on the nuclear issue. Washington believed that addressing the near-term nuclear threat was the most urgent priority and that seeking to constrain Iranian behavior across the board would have made any deal unachievable. Thus, the JCPOA does not bar Iran from engaging in destabilizing activities in the region or repressive activities at home. But neither does it bar the United States from countering such activities. As part of this option, Washington should take a more assertive approach, in close coordination with its regional partners, in pushing back against Iranian efforts to meddle in the affairs of its neighbors and expand its regional influence. That would include maintaining a formidable U.S. military presence in the region (and reacting firmly to any Iranian attempts to challenge U.S. military assets); bolstering the defense capabilities of Gulf partners through arms transfers, training, and joint exercises; addressing the Iranian missile threat by imposing missile-related sanctions, impeding Tehran’s missile-related procurement (in accordance with U.N. Security Council resolution 2231), and promoting integrated regional missile defenses; interdicting Iran’s arms supplies

to its regional proxies (also in accordance with resolution 2231); and exposing Tehran’s human rights abuses (including its unjustified incarcerations of dual nationals). The Trump administration’s imposition of sanctions on February 2017, on multiple entities and individuals for supporting Iran’s ballistic missile program or the Islamic Revolutionary Guard Corps’ Quds force was consistent with this option and designed to signal a tougher approach to countering Tehran’s provocative behavior.

- **Preserving the JCPOA while countering Iran’s provocative behavior.** Maintaining the JCPOA while pushing back against objectionable Iranian behavior in the non-nuclear realm will require careful balancing. The United States should enforce existing non-nuclear sanctions against Iran (which are not precluded by the JCPOA) and, when warranted, should impose new sanctions for non-nuclear reasons (e.g., support for terrorist organizations and other proxies, ballistic missile activities, human rights abuses). At the same time, Washington will need to ensure that any new sanctions are well justified and carefully targeted on Iran’s non-nuclear activities in order to avoid the impression that the United States is seeking to restore pre-JCPOA sanctions under a non-nuclear label and reverse the benefits of sanctions relief—an impression that could result in opposition from America’s P5+1 partners and Tehran scaling back the implementation of its nuclear commitments. While working with Congress on any new sanctions legislation, the Trump administration will need to resist measures that would contravene the JCPOA (e.g., rescinding the license for the Boeing aircraft sale) or that are intended to provoke the Iranians into withdrawing from the agreement. In general, if Washington wants Iran to continue fulfilling its nuclear commitments, it is important that Iranians receive the sanctions relief benefits to which they are entitled. That

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<sup>23</sup> International Atomic Energy Agency, INFCIRC/907, December 23, 2016 <https://www.iaea.org/sites/default/files/publications/documents/infcircs/2016/infcirc907.pdf>.

does not mean the United States is required to work actively to stir up business for Iran. But it does mean complying with U.S. sanctions relief commitments, publishing detailed information about U.S. sanctions policy, and helping international banks and businesses understand how they can avoid running afoul of remaining U.S. sanctions.

- **Minimizing risks after 10-15 years.** The Trump administration should consider ways of minimizing the risk that, after JCPOA nuclear restrictions expire, Iran will greatly expand its enrichment capacity, break out of the agreement, and seek nuclear weapons. Efforts should be made in the coming years to persuade Iran that it can achieve legitimate nuclear energy goals without acquiring the large enrichment capacity needed to produce fuel for power reactors. Russia, which has a commercial stake in continuing to sell reactor fuel to Iran, could be helpful in making that case. If the Iranians nonetheless remain determined to achieve an “industrial-scale” enrichment capability, they might still be prepared to postpone that capability by agreeing to defer the dates at which enrichment restrictions expire. While pressure alone would probably not induce the Iranians to modify JCPOA provisions in this way, they might be more amenable to negotiations if offered incentives, such as an offer to terminate U.S. primary sanctions that prevent U.S. entities and individuals from doing business with Iran, an approach which has the advantage of allowing Americans to compete on an equal basis with Europeans and Asians.
- **Deterring breakout.** Regardless of whether the expiration dates are eventually modified, it is essential that Iran be deterred from breaking out and producing nuclear weapons—after 15 years or before. Accordingly, the administration should declare that it is U.S. policy to prevent Iran from acquiring nuclear weapons and that the United States is prepared to use military force, if necessary, to stop Iran from

breaking out and producing nuclear weapons. To demonstrate national unity and strengthen the deterrent effect of such a declaration, Congress should adopt an Authorization for Use of Military Force (AUMF) in the event that the president determines, and provides credible evidence to Congress, that Iran is breaking out of its JCPOA and NPT obligations and moving actively toward nuclear weapons.

The third option is the preferred course of action. The first—unilaterally withdrawing from the JCPOA—would isolate the United States, enable Iran to quickly build up its nuclear capacity and shorten its breakout time, and deprive the United States of the ability to mobilize international support for pressures strong enough to get Iran to halt and reverse its nuclear buildup. The second—ramping up sanctions to provide leverage for re-negotiating the deal—would not lead to the immediate collapse of the agreement. But it would be opposed by all other P5+1 governments, would not generate pressures strong enough to overcome Iran’s unwillingness to re-negotiate the JCPOA, and would lead to Iranian responses and implementation disputes that would erode and, over time, probably doom the deal. The third option would not satisfy all critics of the JCPOA. But it would preserve an agreement that, at least so far, is working well as a barrier to a nuclear-armed Iran. And it would address two of the JCPOA’s main vulnerabilities—that it does not address provocative Iranian behavior outside the scope of the deal and that it allows Iran to expand its nuclear capacity and greatly shorten its breakout time after 15 years.

## CHAPTER 4

# REDUCING INCENTIVES FOR OTHER STATES TO GO NUCLEAR

With Iran's options for becoming a nuclear power effectively blocked—for 10 to 15 years and hopefully beyond—there are no non-nuclear weapon states currently believed to be pursuing nuclear weapons. An important non-proliferation challenge for the Trump administration is to keep it that way.

Three states often considered likely to re-evaluate their future nuclear options, if not actually to opt for nuclear weapons, are South Korea, Japan, and Saudi Arabia. All face serious security challenges; all have depended heavily on the United States for their security; and all have wondered at times whether U.S. security assurances could be relied upon. At this stage, the probability that any of these friends of the United States will decide to pursue indigenous nuclear weapons capabilities is low. But however low that probability may currently be, the United States should do what it can to further reduce their incentives for joining the ranks of nuclear-armed states.

### South Korea

Growing alarm about advances in North Korea's nuclear and missile programs and the belligerence of its young leader have triggered an open debate in South Korea about whether it should acquire an independent nuclear weapons capability. Three days after the DPRK's fifth nuclear test, 31 lawmakers from the ruling Saenuri Party issued a statement calling for a parliamentary panel to consider preventive mea-

sures to counter the North Korean nuclear threat, including the redeployment in South Korea of U.S. tactical nuclear weapons (which had been withdrawn from the peninsula in 1991). The organizer of the group, Won Yoo-chul, former Saenuri Party floor leader and declared candidate for ROK president, said South Korea "should devise all possible ways to deter [North Korea], including South Korea's nuclear armament."<sup>24</sup> Won is probably the most outspoken South Korean supporter of pursuing, or at least considering, the nuclear option, but he is joined by a growing number of politicians, media figures, and think tank pundits.

The current nuclear debate in Seoul is not the first time South Korea has thought about having its own nuclear weapons. In the 1970s, motivated by concerns about the reliability of U.S. security commitments, South Korea, under President Park Chung-hee, conducted a covert program for developing nuclear weapons, which was halted when the United States discovered the plan and forced its ally to abandon it.<sup>25</sup>

In response to today's increasing pro-nuclear sentiment, senior ROK government officials have firmly rejected the idea of acquiring an indigenous nuclear capability. Opponents of South Korean nuclear weapons, both in and outside the government, cite the high costs of going nuclear (including the possible termination of the U.S.-ROK alliance, economic sanctions, the cutoff of nuclear reactor fuel supplies, and damage to the ROK's international reputation),

<sup>24</sup> Song Sang-ho, "Ruling party lawmakers propose forming special parliamentary panel on N.K. nukes," *Yonhap*, September 12, 2016, <http://english.yonhapnews.co.kr/news/2016/09/12/41/0200000000AEN20160912005700315E.html>.

<sup>25</sup> Mark Fitzpatrick, "Asia's Latent Nuclear Powers: Japan, South Korea, and Taiwan," *The International Institute for Strategic Studies*, 2016, pp. 18-22.

and they express confidence that U.S. alliance commitments can continue to underwrite their security. They also claim that South Korean nuclear proponents are a small albeit vocal minority, that pro-nuclear statements often reflect the tactical objective of pushing China and the United States to get tougher on North Korea (rather than real support for nuclear weapons), and that public opinion polls showing strong South Korean support for nuclear weapons are misleading (because they are often conducted soon after DPRK provocations and do not ask respondents to consider the adverse consequences of a decision to go nuclear).<sup>26</sup>

### ***Increasingly independent but still reliant on the U.S.***

Even South Koreans who strongly oppose an indigenous ROK capability, however, are deeply frustrated that the major powers, especially the United States and China, have been unable to rein in North Korea. This frustration—and concern in certain quarters that neither Washington nor Beijing is sufficiently committed to resolving the problem—has given rise to a South Korean desire to act more assertively and independently to counter the North Korean threat. To deter the DPRK and reassure the South Korean public of their resolve to defend the country, ROK military leaders have given publicity to their plans for pre-emptive conventional missile strikes against DPRK nuclear facilities,<sup>27</sup> for acquiring and deploying attack submarines that can track and destroy North Korean missile-carrying submarines,<sup>28</sup> and for setting up a brigade-size “decapitation unit” tasked with targeting North Korea’s “wartime command.”<sup>29</sup>

But even as the ROK develops its own capabilities and plans for defending against North Korea, it recognizes that it must continue to rely heavily on the United States and its extended deterrent. Most senior ROK civilian officials and military officers believe, at least at the present time, that the United States will honor its alliance obligations. Still, they are uncertain about the future. They followed the 2016 U.S. presidential election closely and are worried by the strong popular support given to scaling back American foreign commitments. At a more technical level, some ROK security experts are concerned that the United States may be emphasizing conventional and de-emphasizing nuclear responses to North Korean attack (even a nuclear attack), and they are troubled by the prospect that, if and when American territory becomes vulnerable to a North Korean nuclear-armed ICBM, Washington would become reluctant to come to the defense of its ally.<sup>30</sup>

Given these concerns, the ROK government has pressed the United States in recent years to enhance the extended deterrent in a variety of ways. South Korea has requested more information about U.S. plans for using nuclear weapons against North Korea and has sought to play a more prominent role in developing operational plans and even executing them. They have called for consultative and nuclear-sharing arrangements similar to those the United States has in place with its non-nuclear NATO allies.<sup>31</sup> They have proposed the permanent stationing of U.S. “strategic assets” (e.g., dual-capable aircraft) in South Korea and even raised the possibility of re-deploying U.S. nuclear weapons to bases in South Korea,<sup>32</sup> an idea supported in a report of the National Unification Advisory Council, a presidential advisory group.<sup>33</sup>

<sup>26</sup> For a discussion of the motivations behind growing South Korean interest in nuclear weapons, see: Robert Einhorn and Duyeon Kim, “Will South Korea Go Nuclear?” *Bulletin of the Atomic Scientists*, August 15, 2016, <http://thebulletin.org/will-south-korea-go-nuclear9778>.

<sup>27</sup> Priyanka Mogul, “As nuclear threat escalates, South Korea has concrete plans to eliminate Kim Jong-un,” *International Business Times*, September 23, 2016, <http://www.ibtimes.co.uk/nuclear-war-looms-south-korea-has-concrete-plans-eliminate-kim-jong-un-1582920>.

<sup>28</sup> Franz-Stefan Gady, “South Korea Launches Latest Attack Submarine,” *The Diplomat*, November 10, 2016, <http://thediplomat.com/2016/11/south-korea-launches-latest-attack-submarine/>.

<sup>29</sup> Joshua Berlinger and K.J. Kwon, “South Korea speeds up creation of King Jong Un ‘decapitation unit,’” *CNN*, January 5, 2017, <http://www.cnn.com/2017/01/05/asia/south-korea-kim-jong-un-brigade/>.

<sup>30</sup> Einhorn and Kim, *op. cit.*

<sup>31</sup> Yoshihiro Makino, “S. Korea eyed shared control of nuclear weapons with the U.S.,” *The Asahi Shimbun*, September 14, 2016, <http://www.asahi.com/ajw/articles/AJ201609140043.html>.

<sup>32</sup> *Ibid.*

<sup>33</sup> “Bring back U.S. nukes, says Blue House report,” *JoongAng Daily*, October 14, 2016.



## ***Addressing ROK concerns***

In light of the growing North Korean threat, the Obama administration gave high priority to working with South Korea to bolster allied defense capabilities and reinforce extended deterrence. Among the high-profile measures of support, the United States sent strategic bombers from Guam to fly over South Korea, carried out in spring 2016 the largest joint U.S.-ROK military exercises since 2010, and agreed with the ROK to deploy the THAAD missile defense system. In a meeting with President Park Geun-hye in September 2016, President Obama pledged, “I want to reaffirm that our commitment to the defense and security of South Korea, including extended deterrence, is unwavering.”<sup>34</sup>

In addition, the United States elevated the level of bilateral consultations on deterrence issues. At the December 2016 launch of that new mechanism—the Extended Deterrence Strategy and Consultation Group (EDSCG)—Washington agreed “to regularly deploy U.S. strategic assets for the defense of the ROK, as well as to enhance such measures and identify new or additional steps to strengthen deterrence.” The joint statement reaffirmed U.S. support for extended deterrence: “The United States reiterated its ironclad commitment to draw on the full range of its military capabilities, including the nuclear umbrella, conventional strike, and missile defense, to provide extended deterrence for the ROK, and reaffirmed the longstanding U.S. policy that any attack on the United States or its allies will be defeated, and any use of nuclear weapons will be met with an effective and overwhelming response.”<sup>35</sup>

The ROK government has welcomed high-level statements of support and tangible gestures like the bomber overflights. It sees such highly visible expressions of support as essential to reassuring the South Korean public that it can continue to count on the United States. But in both senior-level and expert-level ex-

changes between government officials of the two sides, the South Koreans have pressed for more.

While trying to be as responsive as possible to ROK concerns and proposals, the Americans have only been prepared to go so far. They point out to their South Korean counterparts that the U.S. president’s responsibility over the use of American nuclear weapons cannot be shared, that the role of America’s NATO allies in nuclear planning and operations is not as great as ROK experts assume, and that ideas such as the redeployment of U.S. nuclear weapons in South Korea raise serious practical problems and in any event are unnecessary given the availability of globally deployable, nuclear-capable aircraft and U.S. central strategic systems to deter and, if necessary, respond to a North Korean attack.

## ***Reducing ROK incentives to acquire nuclear weapons***

Reducing South Korea’s incentives for acquiring its own nuclear weapons will require the Trump administration to pursue two separate lines of policy. The first is seeking to eliminate North Korea’s nuclear capability or at least limiting that capability and reducing the threat it poses to ROK security. Increased South Korean interest in having its own nuclear deterrent is based almost entirely on the North Korean nuclear threat and the growing perception that it may now be irreversible. A credible and durable solution to that challenge would effectively silence most South Korean proponents of nuclear weapons.

The second line of policy, which is crucial given the limited prospect that the first will succeed, is ensuring that the ROK government and public have confidence in the reliability of U.S. security assurances. To a large extent, that will require doing much of what the United States is already doing—assisting South Korea to strengthen its own conventional military capabilities, cooperating in the deployment of

<sup>34</sup> Song Sang-ho, “Obama’s extended deterrence intended to squelch doubts over U.S. security commitment: analysts,” *Yonhap News Agency*, September 7, 2016, <http://english.yonhapnews.co.kr/focus/2016/09/07/671700000000AEN20160907005900315E.html>.

<sup>35</sup> State Department, “Joint Statement on the Inaugural Meeting of the Extended Deterrence Strategy and Consultation Group (EDSCG)”, December 20, 2016, <http://www.state.gov/r/pa/prs/ps/2016/12/265886.htm>.

missile defenses, reassuring South Koreans with regular high-level reaffirmations of support, providing tangible demonstrations of U.S. commitment with joint military exercises and regular visits or deployments of U.S. strategic assets to the peninsula, and consulting closely on the requirements of extended deterrence.

The Trump administration has already taken steps in that direction. In a January 2017 phone conversation with South Korean Acting President Hwang Kyo-ahn, President Trump reaffirmed the U.S. “ironclad commitment” to defend the ROK, and the two leaders agreed to take steps to strengthen joint defense capabilities.<sup>36</sup> In his first overseas trip, Secretary of Defense Jim Mattis told the ROK defense minister that “any attack on the United States, or its allies, will be defeated, and any use of nuclear weapons would be met with a response that would be effective and overwhelming.”<sup>37</sup>

But ensuring that South Korea will have confidence in U.S. assurances may require the administration to be more responsive than the United States has been so far to ROK proposals for giving Seoul a more important role in extended deterrence. That may mean sharing more information about U.S. plans, enabling the ROK to participate more significantly in the planning process, or deploying certain U.S. strategic assets, such as dual-capable aircraft, more persistently, or even permanently, in South Korea. While there are sound reasons for resisting some ROK requests for greater participation in information-sharing and nuclear decision-making or for the redeployment of U.S. nuclear weapons, permitting South Korea to play a more active and responsible role in ensuring effective deterrence will go a long way toward reducing its interest in acquiring nuclear weapons.

It is important to keep in mind that, from the standpoint of U.S. non-proliferation objectives, ROK in-

terest in reinforcing the U.S. extended deterrent is very positive; it reflects a South Korean preference for continuing to rely on American security guarantees rather than for pursuing an independent nuclear deterrent capability. It is in the U.S. interest to maintain that preference.

## Japan

While Japan, unlike South Korea, never embarked on a nuclear weapons development program, it carried out a series of studies, some within and some outside the government, which assessed whether it should acquire nuclear weapons. But as Mark Fitzpatrick points out, each study came to the same conclusion: “going nuclear was neither desirable nor necessary as long as Japan could rely on the U.S. defense commitment.” At the same time, these studies recommended that Japan maintain a “hedging strategy” involving the acquisition and operation of dual-use capabilities that would serve genuine civil nuclear energy objectives but could also be directed to the production of nuclear weapons if warranted by international developments.<sup>38</sup>

To serve its ambitious nuclear energy goals as well as to acquire a nuclear weapons hedge, Japan pursued both uranium enrichment and plutonium reprocessing, the only non-nuclear weapon state to acquire both technologies. So, unlike South Korea—which in recent years has developed an interest in obtaining both fuel cycle capabilities but has so far been prevented from doing so by its civil nuclear cooperation agreement with the United States—Japan has long had a “latent” ability to produce nuclear weapons relatively quickly, perhaps requiring a few years to produce efficient, miniaturized warheads, and much shorter to produce less sophisticated devices. Its development of powerful rockets for civil space launch purposes, which could be adapted for

<sup>36</sup> “Trump reiterates ‘ironclad commitment’ to defend S. Korea: White House,” *Yonhap News Agency*, January 30, 2017, <http://english.yonhapnews.co.kr/news/2017/01/30/0200000000AEN20170130000754315.html>.

<sup>37</sup> Missy Ryan, “Mattis vows U.S. will live up to commitments, respond strongly to North Korea,” *The Washington Post*, February 3, 2017, [https://www.washingtonpost.com/world/us-will-live-up-to-commitments-respond-strongly-to-north-korea-mattis-vows/2017/02/02/f496c8b8-e9b7-11e6-bf6f-301b6b443624\\_story.html?utm\\_term=.ceb3a2d749fb](https://www.washingtonpost.com/world/us-will-live-up-to-commitments-respond-strongly-to-north-korea-mattis-vows/2017/02/02/f496c8b8-e9b7-11e6-bf6f-301b6b443624_story.html?utm_term=.ceb3a2d749fb).

<sup>38</sup> Fitzpatrick, *op. cit.*, pp. 67-70.

use as ballistic missiles, has contributed significantly to Japan's hedging strategy.

In addition to the strategic assessment that an indigenuous nuclear deterrent is not needed to ensure national security, the Japanese public has held strongly negative attitudes toward nuclear weapons ever since the nuclear attacks against Hiroshima and Nagasaki in 1945 (again in contrast with South Korea, where opinion polling consistently indicates majority support for an ROK nuclear capability). Japan's aversion to "all things nuclear" was further strengthened by the Fukushima disaster in 2011. A July 2016 opinion poll found that 80.3 percent of the Japanese public opposed Japan's possession of nuclear weapons, while 59 percent of the South Korean public favored ROK possession of nuclear weapons.<sup>39</sup>

Tokyo's rejection of nuclear weapons was codified in 1971 by the Diet's adoption of the Three Non-Nuclear Principles—no manufacturing, possessing, or permitting entry into Japan of nuclear weapons—and by Japan's subsequent adherence to the NPT (albeit not without a vigorous internal debate and a statement at the time affirming its right under Article X of the treaty to withdraw if its "supreme interests" were jeopardized). The IAEA, which for decades has devoted more resources to monitoring Japan than any other country, has never questioned Japan's compliance with its safeguards obligations. At a press conference in Hiroshima in August 2016, Prime Minister Shinzo Abe reiterated Japan's commitment to its non-nuclear status: "There is no way that Japan will either possess nuclear weapons or consider possessing such arms . . . As our national policy, we stick to the three non-nuclear principles."<sup>40</sup>

Notwithstanding Japan's non-nuclear course to date, many observers, both Japanese and foreign, believe

Tokyo would reconsider its nuclear options if its international security environment were to deteriorate significantly and if it were to lose confidence in the reliability of U.S. assurances under the U.S.-Japan Treaty of Mutual Cooperation and Security.

### ***A deteriorating security environment***

Japan's security environment has indeed deteriorated in recent years. Like the South Koreans, the Japanese are alarmed by the accelerated pace of North Korea's nuclear and missile programs and by the provocative rhetoric and behavior of its leader. They see in the repeated flight-testing of medium-range missiles, several of which landed in Japan's exclusive economic zone, a DPRK determination to pose a nuclear threat to Japan. The Japanese government's plan to hold evacuation drills in urban areas to prepare for a possible North Korean missile strike is an indication of its heightened threat perception.<sup>41</sup>

While deeply troubled by North Korea, the Japanese regard China as posing the more profound, long-term challenge. Tensions have arisen since 2010 between the two countries over disputed islands in the East China Sea that the Japanese call the Senkakus and the Chinese call the Diaoyus. Tokyo is concerned by frequent incursions by large numbers of Chinese fishing boats and "law enforcement" vessels in waters surrounding the islands, which Japan's defense minister recently said "represent China's unprovoked escalation in the waters surrounding Japan and its attempt to change the status quo."<sup>42</sup> The Japanese see Beijing's assertive behavior over the islands—together with its unilateral declaration of an air defense identification zone (ADIZ) over two-thirds of the East China Sea, its efforts to extend the reach of its naval and air forces beyond the first island chain into the Western Pacific, its territorial

<sup>39</sup> "The 4<sup>th</sup> Japan-South Korea Joint Public Opinion Poll (2016)," The Genron NPO and East Asia Institute, July 2016, [http://www.genron-npo.net/pdf/forum\\_2016\\_en.pdf](http://www.genron-npo.net/pdf/forum_2016_en.pdf).

<sup>40</sup> "Abe Rules Out Possibility that Japan Will Possess Nuclear Weapons," *Mainichi*, August 6, 2016, <http://mainichi.jp/english/articles/20160806/p2a/00m/0na/012000c>.

<sup>41</sup> "Japan Plans Evacuation Drills With Eye to North Korea," *Nikkei Asian Review*, January 4, 2017, <http://asia.nikkei.com/Politics-Economy/International-Relations/Japan-plans-evacuation-drills-with-eye-to-North-Korea>.

<sup>42</sup> Tomomi Inada, "The Evolving Japan-U.S. Alliance," September 15, 2016, [https://csis-prod.s3.amazonaws.com/s3fs-public/event/160915\\_Tomomi\\_Inada\\_transcript.pdf](https://csis-prod.s3.amazonaws.com/s3fs-public/event/160915_Tomomi_Inada_transcript.pdf).

claims and military construction in the South China Sea, and its ambitious conventional and nuclear modernization programs—as evidence of China’s intention to challenge U.S. military supremacy and dominate the region.

Japan has responded to the North Korean and Chinese threats both by strengthening its own defense capabilities and by looking to the U.S.-Japan alliance. Regarding Japan’s own defenses, Prime Minister Abe has been determined to relax post-World War II constraints on Japan’s military capabilities and responsibilities. In 2015, his cabinet adopted new security legislation that allowed Japan’s Self-Defense Forces, in exercising the right of collective self-defense, to assist U.S. forces in regional contingencies. The Abe administration has given high priority to boosting Japan’s missile defense capabilities, including by acquiring Aegis destroyers, radars, and interceptors and cooperating with the United States in the development of an advanced interceptor missile. To fill a potential gap in the alliance deterrence posture, the Japanese have been studying the possibility of developing conventional precision-strike missiles. In January 2017, Abe said he was considering acquiring the ability to strike enemy bases before a missile attack is initiated against Japan.<sup>43</sup> In December 2016, Abe’s cabinet approved Japan’s largest annual defense budget for the fiscal year beginning in April 2017.<sup>44</sup>

### ***Still relying on the U.S.-Japan alliance***

While working to build up its own military capabilities, Japan has also relied heavily on its alliance with the United States, which was given a boost in April 2015 by the adoption of new Japan-U.S. Defense

Cooperation Guidelines, which replaced the 1997 guidelines and established a standing policy and operational coordination body to ensure close cooperation in a crisis.<sup>45</sup> In December 2016, during his last visit to Japan as secretary of defense, Ash Carter said the new guidelines “widen the aperture for modernizations,” including deployment to Japan of sophisticated capabilities such as the F-35 joint strike fighter, Aegis ballistic missile defense ships, P-8 Poseidon maritime patrol aircraft, E-2D Hawkeye advanced early warning aircraft, and V-22 Ospreys. He declared that the U.S.-Japan alliance “has never been stronger or more capable of contributing to security throughout the region and beyond.”<sup>46</sup>

Notwithstanding Carter’s positive assessment, the Japanese, like the South Koreans, have from time to time had questions about the credibility of the U.S. nuclear umbrella, including concerns about defense budget austerity in Washington, a perceived U.S. de-emphasis of nuclear deterrence, the growth of isolationist sentiment in the American public, and the potential de-coupling effects of North Korean nuclear-armed ICBMs.<sup>47</sup>

In addition to concerns shared with Seoul, Tokyo has worried about the implications of shifts in U.S.-Chinese military balances. In the conventional area, it has feared that China’s anti-access area-denial capabilities could undermine longstanding U.S. air and naval superiority in the Western Pacific and boost Beijing’s confidence in pursuing an aggressive regional posture.<sup>48</sup> In the nuclear realm, the Japanese are concerned that, if the United States accepts either mutual vulnerability with China or nuclear parity (as a result of further U.S. reductions and Chinese numerical and qualitative improvements),

<sup>43</sup> “Abe to consider acquiring the ability to strike enemy bases before a missile attack,” *The Yomiuri Shimbun*, January 27, 2017, <http://www.standard.net/World/2017/01/26/Abe-to-consider-acquiring-the-ability-to-strike-enemy-bases-before-a-missile-attack.html>.

<sup>44</sup> “Japan Cabinet Approves Biggest Defense Budget,” *Agence France-Presse*, December 22, 2016, <https://www.yahoo.com/news/japan-cabinet-approves-biggest-defence-budget-035113584.html>.

<sup>45</sup> Sheila Smith, “The U.S.-Japan Alliance Upgrades and Maritime Contention in Asia,” *Asia Maritime Transparency Initiative*, April 30, 2015, <https://amti.csis.org/the-u-s-japan-alliance-upgrades-and-maritime-contention-in-asia/>.

<sup>46</sup> Amaani Lyle, “Carter, Japanese Defense Minister Assure Enduring Security,” DoD News, December 7, 2016, <https://www.defense.gov/News/Article/Article/1023361/carter-japanese-defense-minister-assure-enduring-security-peacekeeping-alliance>.

<sup>47</sup> Fitzpatrick, *op. cit.*, pp. 104-109.

<sup>48</sup> *Ibid.*, p. 104.

the Chinese could also become more assertive at the conventional level.<sup>49</sup>

Washington has been sensitive to these concerns. In addition to maintaining more than 50,000 military personnel in Japan and engaging in robust defense cooperation and joint military exercises, the United States has constantly sought to reassure the Japanese. In a visit to Japan in October 2006, Secretary of State Condoleezza Rice pledged that “the United States has the will and the capability to meet the full range, and I underscore full range, of its deterrence and security commitments to Japan.” In remarks to a Tokyo audience in November 2009, President Obama stated that, “as long as these [nuclear] weapons remain, the United States will maintain a strong and effective nuclear deterrent that guarantees the defense of our allies.”<sup>50</sup>

In preparing the Obama administration’s 2010 Nuclear Posture Review (NPR), a major effort was made to ensure that Japan was comfortable with the results. Brad Roberts, the former senior Department of Defense official who served as point man for consultations with the Japanese on the NPR, noted that Tokyo’s reservations were taken fully into account in the NPR’s rejection of making deterrence of nuclear attack the “sole purpose” of U.S. nuclear weapons. In connection with the U.S. retirement of the Tomahawk nuclear-armed, sea-launched cruise missile, which Japan had regarded as an important component of the U.S. nuclear umbrella, the administration committed to modernize a globally deployable force of nuclear-armed fighter-bombers. Moreover, it went to great lengths to assure the Japanese that such a force, together with U.S. central strategic systems (including ICBMs and submarine-based nuclear missiles), would provide an effective deterrent—an explanation that addressed but did not

fully alleviate Japanese concerns. In connection with these NPR-related discussions, the Extended Deterrence Dialogue was established to serve as a bilateral forum for addressing extended deterrence issues.<sup>51</sup>

U.S. reactions to China’s assertive activities surrounding the disputed islands in the East China Sea and its unilateral ADIZ declaration were designed to reassure Japan. The Japanese especially welcomed President Obama’s statement in April 2014 that the Senkaku Islands were covered by Article 5 of the U.S.-Japan security treaty and that the United States would oppose any unilateral attempt to undermine Japan’s administration of the islands.<sup>52</sup> In November 2013, Secretary of Defense Chuck Hagel declared that China’s ADIZ announcement “will not in any way change how the United States conducts military operations in the region,” and took the occasion to reaffirm the U.S. commitment to Japan’s security.<sup>53</sup> Following his visit to the ROK in early February 2017, Secretary of Defense Mattis stopped in Japan to reassure the Japanese: “I made clear that our longstanding policy on the Senkaku Islands stands—the U.S. will continue to recognize Japanese administration of the islands. And as such, Article 5 of the U.S.-Japan security treaty applies.”<sup>54</sup>

The Japanese, like the South Koreans, can never be reassured enough, especially given current worrisome developments in the regional security environment. We can expect that, in future bilateral security meetings, the Japanese will press for many of the things the South Koreans are seeking, including a more prominent role in the planning and operation of the U.S. extended nuclear deterrent. While the likelihood of Japan eventually opting for its own nuclear deterrent is lower than that of South Korea, it still behooves the Trump administration to give

<sup>49</sup> Brad Roberts, “Extended Deterrence and Strategic Stability in Northeast Asia,” NIDS Visiting Scholar Paper Series, August 9, 2013, <http://www.nids.mod.go.jp/english/publication/visiting/pdf/01.pdf>.

<sup>50</sup> Cited in Roberts, pp. 25-26.

<sup>51</sup> Roberts, pp. 25-27.

<sup>52</sup> Ankit Panda, “Obama: Senkakus covered under U.S.-Japan Security Treaty,” *The Diplomat*, April 23, 2014, <http://thediplomat.com/2014/04/obama-senkakus-covered-under-us-japan-security-treaty/>.

<sup>53</sup> “Statement by Secretary of Defense Chuck Hagel on the East China Sea Air Defense Identification Zone,” Department of Defense, November 23, 2013, <http://archive.defense.gov/releases/release.aspx?releaseid=16392>.

<sup>54</sup> Jane Perlez, “China Assails U.S. Pledge to Defend Disputed Islands Controlled by Japan,” *The New York Times*, February 4, 2017, [https://www.nytimes.com/2017/02/04/world/asia/china-us-jim-mattis-japan-islands.html?\\_r=0](https://www.nytimes.com/2017/02/04/world/asia/china-us-jim-mattis-japan-islands.html?_r=0).



priority in its bilateral relations with Tokyo to addressing Japanese anxieties and ensuring that its ally remains confident in U.S. security guarantees.

## Saudi Arabia

Of the states of the Middle East, the one most likely to pursue a nuclear weapons capability is the Kingdom of Saudi Arabia.<sup>55</sup>

The JCPOA has reduced but not eliminated Saudi concerns about a nuclear-armed Iran. Despite well-known misgivings, the Saudis publicly endorsed the deal,<sup>56</sup> although their endorsement probably reflected a reluctance to break ranks publicly with their principal security partner, the United States, rather than genuine support for the agreement. Riyadh is concerned that the JCPOA has only postponed Iran's acquisition of nuclear weapons. It is convinced that the deal has not affected Iran's nuclear ambitions and that Iran's leaders are determined to build up their nuclear capacity and produce nuclear weapons when key restrictions expire after 10 and 15 years.<sup>57</sup>

The Saudi perception of the Iranian threat is not confined to the nuclear issue. The Saudis see Iran as engaged in a range of destabilizing activities aimed at achieving regional hegemony, including using proxies such as Hezbollah and the Houthis to advance their goals, intervening directly in the Syrian and Yemeni civil wars, seeking to undermine the Sunni government in Bahrain, and in general working to sow instability, weaken rival governments, and become the dominant power in the region. To the Saudis, Iran is not just an aggressive regional rival; it is an existential threat seeking to undermine the kingdom's monarchy and internal order.<sup>58</sup>

Saudi officials believe that, even if the JCPOA temporarily prevents Iran from producing nuclear weapons, the nuclear deal could exacerbate the Iranian threat to the region. They fear the deal will confer legitimacy on the regime in Tehran, end its political isolation, and empower it to play a more aggressive and influential regional role. They also maintain that the JCPOA's immediate release of billions of dollars of previously restricted Iranian oil revenues as well as the economic recovery resulting from JCPOA-mandated sanctions relief will give Iran's leaders additional economic resources to support their regional proxies, strengthen their conventional military capabilities, and eventually build up their nuclear program.

### *Declining confidence in the United States*

While Saudi Arabia's concerns about Iran's behavior have grown, its confidence in the United States as a provider of security has declined. The Saudis do not enjoy the kind of formal, legally binding security guarantees that the United States provides to such treaty allies as NATO, South Korea, and Japan. But U.S. administrations of both political parties have nonetheless acted as if the security of the kingdom was a vital interest of the United States, most clearly when it evicted Iraqi forces from Kuwait and protected Saudi Arabia in the first Gulf War. In the last few years, however, Saudi leaders have come to the view that America's commitment to their security and to the security of its partners in the Gulf region has diminished.

Saudi officials cite a long list of reasons why their confidence in U.S. assurances has declined. They say the Obama administration did not prevent former Egyptian President Hosni Mubarak's ouster, failed to enforce its red line against Syria's use of chemi-

<sup>55</sup> Israel, which is universally regarded as possessing nuclear weapons but does not acknowledge its capability, is not included in this judgment.

<sup>56</sup> In September 2015, Foreign Minister Adel Al-Jubeir said, "We believe this agreement will contribute to security and stability in the region by preventing Iran from acquiring a nuclear capability." Peter Baker, "Obama and Saudi King Sidestep Dispute Over Iran Nuclear Deal," *The New York Times*, September 4, 2015, [https://www.nytimes.com/2015/09/05/world/middleeast/obama-and-saudi-king-sidestep-dispute-over-iran-nuclear-deal.html?\\_r=0](https://www.nytimes.com/2015/09/05/world/middleeast/obama-and-saudi-king-sidestep-dispute-over-iran-nuclear-deal.html?_r=0).

<sup>57</sup> Remarks by Prince Turki al-Faisal, former Saudi intelligence chief and ambassador to the United States. Dan Drolette Jr., "The Feud with Iran: A Saudi View," *The Bulletin of the Atomic Scientists*, January 5, 2016, <http://thebulletin.org/feud-iran-saudi-view9033>.

<sup>58</sup> This analysis of the Saudi issue draws heavily on interviews, many of them not-for-attribution, conducted with senior Saudi officials and experts in connection with a Brookings projects on prospects for proliferation in the Middle East: Robert Einhorn and Richard Nephew, "The Iran Nuclear Deal: Prelude to Proliferation in the Middle East?" Brookings Arms Control and Nonproliferation Series, Paper 11, May 2016.



cal weapons, gave only lukewarm support to Syrian rebels, and was determined to reduce its military presence in the region. They maintain that Washington has not done enough to support its traditional regional partners against Iranian inroads, and they fear that the United States has been prepared to accept and even encourage a more central Iranian role in regional affairs at their expense.<sup>59</sup>

Given its concerns about U.S. reliability, Saudi Arabia has begun to act more assertively and independently. Under the leadership of Deputy Crown Prince and Minister of Defense Mohammed bin Salman, the Saudis have significantly strengthened their conventional military capabilities, explored cooperation with Russia and other potential partners, and acted more aggressively in regional conflicts, especially in prosecuting their military campaign in Yemen. However, when pressed about possible interest in distancing the kingdom from the United States, senior Saudi officials maintain that, given the close U.S.-Saudi defense links that have been the foundation of Saudi security for many years, Riyadh has little choice but to continue relying on the United States.

### ***Possible Saudi interest in the bomb***

Notwithstanding their continued dependence on the United States, the Saudis have made little effort to disavow a possible interest in pursuing nuclear weapons at some future time. From time to time, senior Saudis, some holding leadership positions and some outside government circles, have indicated that, if the Iranians acquire nuclear weapons, Saudi Arabia will have no choice but to match them.<sup>60</sup>

What the Saudis are lacking is not motivation or financial resources but nuclear infrastructure and expertise. Unlike the Japanese and South Koreans, both of whom have advanced nuclear energy programs, extensive nuclear infrastructure, and an

abundance of nuclear scientists and engineers, the Saudis would need to start nearly from scratch in order to develop the capability to produce nuclear weapons indigenously. The Saudis have a very ambitious civil nuclear energy program. They plan to construct 16 nuclear power reactors over the next 20 years in order to rely more on nuclear and other non-fossil fuel sources for electricity generation and to preserve fossil fuels for export. Saudi civil nuclear officials emphasize that this a long-term process. Their first priority is to develop human infrastructure through the training of approximately 1000 nuclear experts over the next five years. Asked about a possible uranium enrichment program, the officials state that there are no current plans for an enrichment program and that such a program is not anticipated for at least 25 years. However, they maintain that there could eventually be an economic justification for an enrichment capacity to provide fuel for 16 power reactors, and so the kingdom does not want to foreclose that option.<sup>61</sup>

In light of the infeasibility for the foreseeable future of Saudi Arabia acquiring an indigenous capability to produce fissile material, commentators have turned to the possibility of the Saudis obtaining the necessary support from a foreign country. Speculation has usually revolved around Pakistan, which is widely assumed to have received generous financial support from the kingdom for its own nuclear weapons program. Rumors have circulated for decades about a Pakistani commitment to assist the Saudis to acquire nuclear weapons—rumors that some Saudis have chosen to propagate, presumably to convey the impression that they are not without options to obtain their own nuclear deterrent. But senior Pakistanis and Saudis deny that any such commitment exists.<sup>62</sup> If some understanding ever existed, it was probably a vague, unwritten assurance many years ago between a Pakistani leader and Saudi king. Given Islamabad's desire to be seen as a responsible nuclear power after the reputational damage done by Pakistani scientist

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<sup>59</sup> *Ibid.*, pp.26-28.

<sup>60</sup> *Ibid.*, p. 35.

<sup>61</sup> *Ibid.*, pp.37-38.

<sup>62</sup> *Ibid.*, p. 39.

A.Q. Khan's black market network as well as its interest in good relations with Iran, Pakistan is very unlikely today to help the Saudis join the ranks of nuclear-armed states.

### ***U.S. policies to maintain a non-nuclear Saudi Arabia***

So the Saudis may be motivated to acquire nuclear weapons, but they recognize the downsides of moving in that direction (e.g., international sanctions, end of U.S. defense cooperation), and they recognize the serious obstacles they would face in building the necessary technical infrastructure. Today, the probability of the kingdom getting the bomb must be considered low. Still, in view of the highly destabilizing consequences of a Saudi nuclear weapons capability, keeping that probability low should be an important element of the Trump administration's policy toward the kingdom and the region in the years ahead. In particular, the administration should:

- Consult regularly with the Saudi government to discuss Iran's implementation of the JCPOA, sharing information about Iran's compliance and assessments of Iran's future nuclear plans and intentions. If the Saudis are confident that the JCPOA is working well and Iran is complying, they will have less incentive to begin taking steps to develop their own capabilities.
- Engage bilaterally with the Saudis on their civil nuclear energy plans, encouraging them to make choices that do not raise concerns that they are pursuing a latent nuclear weapons capability. Such engagement would be facilitated by the conclusion of a U.S.-Saudi agreement for civil nuclear cooperation, which in turn would be facilitated by the United States relaxing its requirement for a formal, legally binding renunciation of enrichment and reprocessing (addressed in the following chapter of this report).
- Encourage Riyadh to cooperate closely with the IAEA in monitoring its civil nuclear program, including by rescinding its Small Quantities Protocol (which exempts countries that do not yet possess significant nuclear materials or facilities from reporting and monitoring requirements) as well as by negotiating an Additional Protocol to its Comprehensive Safeguards Agreement (which would provide the agency a better picture of its future civil nuclear plans).
- Provide credible assurances to Saudi Arabia and other Gulf partners that the United States will maintain a sizable military presence in the region and will remain committed to their security, building on the statement issued at the summit meeting with Gulf Cooperation Council (GCC) members in April 2016 that "the United States policy to use all elements of power to secure its core interests in the Gulf region, and to deter and confront external aggression against its allies and partners . . . is unequivocal."<sup>63</sup> In that connection, the United States should pursue with the Saudis and other GCC partners a coordinated missile defense system and explore the development of a more closely integrated regional security framework, with stronger operational and institutional ties among its members.<sup>64</sup>
- Work with the Saudis and other regional partners to counter Tehran's interference in the affairs of its neighbors and other provocative Iranian regional activities. At the same time, if Iran is genuinely prepared to play a more constructive regional role, the United States, in close coordination with its partners, should be willing to engage with Iran to help resolve regional conflicts and moderate the competition between Iran and its Sunni Arab rivals, especially Saudi Arabia.

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<sup>63</sup> "United States-Gulf Cooperation Council Second Summit Leaders Communique," The White House Press Office, April 21, 2016, <https://www.whitehouse.gov/the-press-office/2016/04/21/united-states-gulf-cooperation-council-second-summit-leaders-communique>.

<sup>64</sup> Einhorn and Nephew, *op. cit.*, p. 58.

## Other countries worth watching

Although it is unlikely that South Korea, Japan, or Saudi Arabia will acquire nuclear weapons, we have a good idea of what might motivate them (security threats from North Korea, China, and Iran) and the U.S. policies that could reduce their incentives to go nuclear (efforts to reduce those threats and reinforce the credibility of U.S. security assurances). In conducting its many-faceted bilateral relations with those three countries, the Trump administration should bear in mind the importance of keeping these friends of the United States on the non-nuclear side of the ledger.

In seeking to hold the number of nuclear-armed states to single digits, however, these three are not the only countries worth thinking about. It is difficult to predict which, if any, countries might develop an interest in nuclear weapons. Syria's collaboration with North Korea to build a plutonium production reactor at al-Kibar came as a surprise. The assumption, even by Israel, had been that the Assad regime regarded its chemical weapons and ballistic missiles as providing a sufficient offset to Israel's nuclear capabilities. The suspected interest of the former Burmese military government in pursuing nuclear weapons—an interest that has been difficult to substantiate<sup>65</sup> and that, in any event, did not get off the ground—also came out of the blue. So the next country discovered to be harboring nuclear weapons ambitions or already embarked on the quest may catch the United States and the international community off guard.

There are a handful of countries which, for a variety of reasons—including past interest in nuclear weapons, a more challenging external security environment, the availability of indigenous technical expertise or access to foreign assistance, or a shift toward less transparent and more autocratic domestic governance—might be

tempted to reconsider their nuclear options. Currently, none of them is likely to pursue nuclear weapons, but it would be prudent to put them on a watch list. Among the countries on such a list:<sup>66</sup>

### *Egypt*

In the 1950s and 1960s, Egypt engaged in activities aimed at developing nuclear weapons, but later abandoned the effort, and its ambitious plans for civil nuclear power never materialized.<sup>67</sup> It now plans to purchase its first power reactor from Russia, but severe economic challenges pose an obstacle to that project. Nuclear weapons are not relevant to Cairo's current security preoccupation—internal security threats emanating from turbulence and extremist ideology in its neighborhood. Although Egypt and Iran have at times been regional rivals and Tehran's interests clash with those of Egypt's main Arab allies and benefactors, Cairo does not see Iran as a direct military threat. Moreover, eliminating nuclear weapons from the Middle East has been a central goal of Egyptian foreign policy. Still, Egypt failed to report to the IAEA some sensitive experiments carried out between 1990 and 2003, which may indicate an interest among Egypt's nuclear scientists, if not at the government level, in exploring military nuclear options. Moreover, if in the future Iran and others in the region appear to be headed toward nuclear weapons, some Egyptians may see a nuclear weapons capability as a way of reversing the precipitous decline in Cairo's regional standing, which has been hard to swallow for a proud nation long considered to be the leader of the Arab world.

### *Turkey*

Like Egypt, Turkey does not regard Iran as a direct military threat. It sees instability and terrorism stem-

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<sup>65</sup> David Albright and Christina Walrond, "Technical Note: Revisiting Bomb Reactors in Burma and an Alleged Burmese Nuclear Weapons Program," Institute for Science and International Security, April 11, 2011, [http://isis-online.org/uploads/isis-reports/documents/Burma\\_Analysis\\_Bomb\\_Reactors\\_11April2011.pdf](http://isis-online.org/uploads/isis-reports/documents/Burma_Analysis_Bomb_Reactors_11April2011.pdf).

<sup>66</sup> In their study of prospects for proliferation in the Middle East (The Iran Nuclear Deal: Prelude to Proliferation in the Middle East? *op. cit.*), Einhorn and Nephew examine the cases of Egypt, Turkey, the United Arab Emirates, and Saudi Arabia and conclude that, while none of those countries is likely to decide to pursue nuclear weapons, the United States should take a variety of steps to further reduce that likelihood. The judgments here draw on that analysis.

<sup>67</sup> Robert Einhorn, *The Nuclear Tipping Point*, (Washington: Brookings Institution Press, 2004), 43-82.

ming largely from the Syrian conflict, including the threat of Kurdish separatism, as its principal security concerns, which cannot be addressed by the possession of nuclear weapons. At the same time, it has a large and growing industrial base, plans to buy nuclear reactors from Russia and Japan, increasingly strained relationships with the United States and its NATO allies (which historically have been a source of security for Ankara and reduced its incentives for acquiring in its own nuclear deterrent), and an authoritarian leader who favors Turkey playing an assertive, independent regional role. In addition, Roketsan, a state-controlled missile producer, is developing a long-range ground-to-ground missile with a range of up to 1000 kilometers.<sup>68</sup> Moreover, although Turkey's nuclear energy officials say they have no plans at present to acquire an enrichment capability, they are not prepared to rule out the option of a future capability.

## ***Syria***

Israel's destruction of the al-Kibar reactor in 2007 probably brought a halt to Damascus' nuclear weapons efforts if not its aspirations. Even though Syria has rejected IAEA requests to investigate facilities suspected of being associated with the destroyed reactor, it is unlikely that significant activities related to the production of fissile material are currently taking place within Syria. Moreover, even before the civil war, Syria lacked the financial resources and human and physical infrastructure needed to produce nuclear weapons indigenously. In its current circumstances, with its economy decimated and its survival as a unitary state in doubt, it is hard to imagine the Damascus government mounting a sustained and disciplined nuclear weapons program. Nevertheless, in light of the existential threat it has faced, with neighboring Sunni Arab governments and powerful non-regional states actively supporting its demise, the Alawite regime, if it ever manages to regain control of a functioning even if truncated state, might return to the idea of having nuclear weapons.

## ***Ukraine***

After Russia violated the assurances it had provided in the 1994 Budapest Memorandum by annexing Crimea and supporting eastern Ukrainian separatists, some Ukrainian politicians argued that it had been a mistake for Ukraine to give up the nuclear weapons located on its territory at the time of the Soviet Union's collapse and to join the NPT as a non-nuclear weapon state. However, despite the acute threat Moscow continues to pose, Ukraine's leaders have chosen to remain on a non-nuclear path.<sup>69</sup> They have recognized that developing their own nuclear deterrent would be time-consuming and expensive at a time of great economic difficulty, could alienate Kiev from its European and American supporters, could run the risk of triggering Russian pre-emptive military action, and could be ineffective in deterring and dealing with Russia's brand of "hybrid warfare." Ukrainian leaders have hoped instead that their security could be protected and their territorial integrity restored by defense cooperation with the West, closer economic links with the European Union, and strong U.S. and European support for economic sanctions to induce Moscow to end its threat to Ukrainian sovereignty. Should Ukrainians conclude that the current approach will not work, and especially if they believe the United States is prepared to improve its relations with Russia at their expense, there might be increased support for taking another look at the nuclear issue.

## ***Myanmar***

In May 2010, a Burmese dissident group claimed that the country's military junta had pursued nuclear and missile programs by acquiring equipment from Germany and Switzerland. While the military leaders may well have aspired to these capabilities, they apparently made little headway, purchasing only a few pieces of equipment with little utility in a nuclear weapons program. Separate reports at

<sup>68</sup> Burak Ege Bekdil, "Turkey Aims to Produce Long-Range Missiles," *Defense News*, February 6, 2017, <http://www.defensenews.com/articles/turkey-aims-to-produce-long-range-missiles>.

<sup>69</sup> For a discussion of Ukraine's nuclear options in the wake of Russia's aggression, see: Robert Einhorn, "Ukraine, Security Assurances, and Nonproliferation," *The Washington Quarterly*, spring 2015.

about the same time claimed that Myanmar was cooperating with North Korea on weapons development. As part of its engagement strategy with the quasi-civilian government that succeeded the junta in 2010, the United States persuaded the Burmese to sign the Additional Protocol and commit to severing their military ties with North Korea. In its 2016 arms control and non-proliferation compliance report, the United States concluded that “there is no evidence that Myanmar (Burma) violated the NPT; however, the United States continues to be concerned about Burma’s willingness to be transparent about its previous nuclear work, given that much of this knowledge remains within the military, which does not report to the civilian government.”<sup>70</sup> The Burmese military retains powerful influence in the country’s affairs, and U.S. officials maintain that the military’s links with North Korea have not been completely terminated.

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<sup>70</sup> U.S. Department of State, “2016 Report on Adherence to and Compliance With Arms Control, Nonproliferation, and Disarmament Agreements and Commitments,” April 11, 2016, <https://www.state.gov/t/avc/rls/rpt/2016/255651.htm>.

## CHAPTER 5

# DISCOURAGING THE SPREAD OF ENRICHMENT AND REPROCESSING

Since the Ford administration, the United States has sought to prevent the spread of enrichment and reprocessing capabilities—the dual-use “fuel cycle” capabilities that can be used to produce fuels for civil nuclear reactors but can also produce highly enriched uranium or plutonium for use in nuclear weapons. Impeding the spread of these capabilities can prevent additional countries from acquiring nuclear weapons, achieving a latent nuclear weapons capability, or pursuing an initially peaceful nuclear program and later shifting to a weapons program. Fortunately, worldwide interest in fuel cycle capabilities, whether for peaceful or military purposes, has markedly declined in recent years.

### Decline in demand for enrichment and reprocessing

Much of the decrease in the demand for civil fuel cycle facilities has been based on economics. Reprocessing plutonium and recycling it as fuel in nuclear reactors has proved to be much more expensive than relying on uranium fuels and storing or disposing of the spent fuel. Moreover, a principal rationale for reprocessing has been to use the separated plutonium as fuel for advanced, fast-neutron reactors, but the development of fast reactors has not met expectations and their commercialization is still a long way off. With respect to enrichment, countries that depend on enriched uranium fuels for their nuclear power programs are much better off purchasing enriched uranium on the international market—where several suppliers are available and prices for uranium and enrichment services are low and are expected to remain

low for the foreseeable future—rather than investing in a costly indigenous enrichment program.

In addition to the economic disincentives to pursuing fuel cycle programs, heightened international sensitivity to the proliferation risks associated with such programs and resulting restrictions on the transfer of fuel cycle equipment and technology—including the Nuclear Supplier Group’s 2011 strengthened guideline on such transfers—have become a significant impediment to countries seeking enrichment or reprocessing.

Today, active fuel cycle programs exist mostly in states that have nuclear weapons. A substantial number of countries that once engaged in commercial reprocessing, including the United States, Germany, Belgium, and the United Kingdom, have already either abandoned or are now phasing out their programs. Japan is the only non-nuclear weapon state that currently has a reprocessing program, and the future of its program is very much in doubt. In the JCPOA, Iran committed not to engage in reprocessing for 15 years and stated its intention not to pursue reprocessing thereafter.

In the enrichment area, with the exception of Germany and the Netherlands, which are members of the URENCO enrichment consortium with the United Kingdom, no non-nuclear weapon state has developed a commercially viable enrichment program. Argentina, Brazil, Japan, and South Africa all developed enrichment capabilities, but Argentine, Brazilian, and Japanese plants are operating on a small scale, and South Africa is currently consider-



ing construction of a new plant after having dismantled two earlier ones.<sup>71</sup> Iran has a small operational capability constrained by the JCPOA. There is little possibility that new or small-scale enrichment operations could compete with such experienced, technologically advanced, and large-scale enrichers as URENCO, Russia, and France.

South Korea is the only non-nuclear weapons state that currently does not have fuel cycle capabilities but has expressed an interest in acquiring them, primarily pyroprocessing (a form of reprocessing) and, to a lesser extent, enrichment.

No enrichment or reprocessing technology holder is currently seeking to export enrichment or reprocessing technologies except to countries that already possess such capabilities (e.g., AREVA's desire to construct a large commercial reprocessing plant in China).

## Interest in fuel cycle facilities could grow

So, at least at the present time, the further spread of enrichment and reprocessing does not appear to be a pressing problem. But the current absence of demand for those sensitive technologies may only be temporary. Several developments could alter the picture.

If China proceeds with its plan to build a large commercial reprocessing facility and if Japan restarts its large Rokkasho reprocessing plant, these decisions by two leading nuclear energy powers could give reprocessing a new lease on life. The JCPOA's acceptance of Iran's enrichment program, currently tightly limited but eventually unconstrained, could stimulate interest in enrichment elsewhere, especially the Middle East. Brazil's and India's interest in enrichment for naval propulsion could provide another justification for getting into the enrichment busi-

ness. Moreover, with a growing number of countries embarking on nuclear power programs, some may decide to pursue enrichment or reprocessing even if the economics are unfavorable, either because they are prepared to pay a premium for what they see as greater energy independence or because they intend to acquire a latent or actual nuclear weapons capability. And while national and NSG restrictions on exports of fuel cycle technology will continue to be an impediment, the technological barriers to indigenous development of fuel cycle programs are coming down.<sup>72</sup>

## Steps to avert the spread of enrichment and reprocessing

So, even though the spread of fuel cycle capabilities is not an acute problem today, it remains a long-term challenge to the global non-proliferation regime. Discouraging the spread of such capabilities should therefore continue to be an important objective of U.S. policy, which could include the following elements:

- Engage in separate discussions with China and Japan about their reprocessing programs, with a view to encouraging Beijing to hold off on purchasing a large plant from AREVA and persuading Tokyo to postpone the restart of the Rokkasho facility, at least until enough Japanese reactors are back on line to utilize the plutonium produced at the facility as mixed oxide fuel and thereby avoid the further accumulation of plutonium in Japan. A pause in Beijing's reprocessing plans could be justified by the disappointing record of China's pilot reprocessing and breeder plants and would give the Chinese greater standing to urge Japan to reduce its inventory of separated reactor-grade plutonium, which China claims could be used in a Japanese nuclear weapons program. A delay in restarting Rokkasho, or better yet a permanent shutdown,

<sup>71</sup> World Nuclear Association, <http://www.world-nuclear.org/information-library.aspx>.

<sup>72</sup> Scott R. Kemp, "The Nonproliferation Emperor Has No Clothes," *International Security* 38, no. 4 (April 2014): 39–78.

would be warranted by the poor economics of plutonium recycling and the technical problems encountered in Japan's reprocessing and breeder programs, and would send a powerful signal to other countries contemplating reprocessing programs, including South Korea.

- Continue to work with South Korea on the joint, 10-year study of the economic and technical feasibility and non-proliferation implications of pyroprocessing, while at the same time exploring alternative approaches to spent fuel management, including long-term interim storage in above-ground dry casks. Washington should continue to make clear that the U.S. decision on whether to grant consent to Seoul to reprocess U.S.-obligated spent fuel will be heavily influenced by U.S. non-proliferation objectives. While most champions of pyroprocessing at the Korea Atomic Energy Research Institute are no doubt motivated strictly by civil nuclear energy goals, it is disturbing that some South Korean advocates of an ROK nuclear weapons program have begun to support pyroprocessing on the grounds that it can provide a latent weapons capability, an argument not likely to make Washington comfortable granting consent to South Korean pyroprocessing.
- Do not insist in all cases that new U.S. civil nuclear cooperation agreements with non-nuclear weapon states must contain a legally binding commitment by the U.S. cooperation partner that it will not pursue enrichment or reprocessing capabilities (the so-called gold standard). U.S. agreements with the United Arab Emirates and Taiwan have included such a commitment, but other prospective cooperation partners have balked, arguing that, while they do not have plans for fuel cycle programs, they are unwilling to forfeit their "right" as NPT members to pursue such programs. In the case of Vietnam, the U.S. accepted a non-binding statement in the agreement's preamble that Vietnam has no intention of pursuing fuel cycle capabilities. But in view of proliferation risks in the Middle

East, Washington has insisted on binding commitments from Saudi Arabia and Jordan, and as a result, negotiations with them have bogged down. Insistence on the gold standard in all cases may result in the United States forgoing nuclear cooperation with states embarking on nuclear energy programs, and that could mean passing up the opportunity, through engagement, to influence those programs. It could also mean leaving the field to other nuclear suppliers that may require less rigorous non-proliferation controls in their agreements for cooperation. Where possible, the Trump administration should press for the gold standard. But it should be prepared, where it sees a net non-proliferation gain, to find alternative ways of discouraging fuel cycle programs, including (a) requiring a legally binding renunciation but in a shorter-duration agreement (e.g., 10-20 years); (b) not banning fuel cycle programs but giving the United States the right to terminate cooperation if its partner later decides to pursue them; or (c) accepting a formal statement of intention rather than a binding obligation.

- Seek agreement among supplier governments that, like the United States, the supplying states will include in their agreements for nuclear cooperation a requirement that their cooperation partners obtain their consent for reprocessing or enriching any nuclear materials they supply. Washington could pursue such a common supplier policy in the Nuclear Suppliers Group or, if that proves difficult or too time-consuming, it could seek agreement among a smaller group of key supplier governments, including Russia, China, France, Japan, and South Korea.
- Support various approaches to the "back end" of the fuel cycle that reduce incentives for reprocessing. One of the principal arguments given for reprocessing is that it can substantially ease the burden of managing large volumes of spent reactor fuel. Cost-effective and politically acceptable approaches to spent fuel management would significantly undercut the case for

reprocessing facilities. The Blue Ribbon Commission on America's Nuclear Future, convened by the Obama administration after it canceled the Yucca Mountain spent fuel disposal project, recommended in 2012 a "consent-based" approach to siting nuclear waste management facilities and called for prompt efforts to develop one or more consolidated waste storage facilities and one or more geologic disposal facilities.<sup>73</sup> While pressing ahead with these domestic waste management efforts, the U.S. administration should consult with other major nuclear energy powers on international solutions, including greater reliance on interim dry-cask storage; spent fuel take-back arrangements along the lines offered by Russia for its reactor and fuel customers; collaborative research on deep borehole disposal of spent fuel; cooperative research and development of advanced nuclear reactors and fuel cycles that do not involve reprocessing; and exploration of repositories for the final disposal of spent fuel. Exploration of spent-fuel repositories could draw on the progress Finland has made in pursuing a final repository as well as the promising report by South Australia's Royal Commission into the Nuclear Fuel Cycle, which recommended that the Australian government pursue the establishment of storage and disposal facilities for spent fuel and waste from other countries.<sup>74</sup>

- Continue to support various forms of fuel supply assurances to reduce incentives for states to pursue their own indigenous enrichment capabilities. A range of fuel assurance arrangements have already been pursued, including a Russian international fuel cycle center at Angarsk, U.S. and Russian LEU reserves, an IAEA fuel bank in Kazakhstan, and a British proposal for enrichment bonds.<sup>75</sup> Although fuel banks and fuel reserves may never actually be drawn

upon, especially with the international market in fuel services so well supplied and consisting of politically diverse suppliers, they provide a measure of insurance against unwarranted fuel supply cutoffs and undercut the argument that indigenous enrichment is needed to ensure a reliable source of supply.

- Explore regional, multinational, and international approaches to reducing incentives for pursuing national enrichment or reprocessing capabilities. Building on successes in establishing regional nuclear-weapons-free zones, the United States could support the adoption of regional or subregional arrangements banning fuel cycle facilities or certain categories of fuel cycle facilities (e.g., a fuel-cycle-free zone for Southeast Asia, a reprocessing-free zone in the Gulf region). Multinationally owned or managed enrichment or reprocessing facilities can be very complicated to set up and, depending on the technology access or sharing arrangements, could actually be conduits for the spread of sensitive technologies. However, in particular circumstances, especially when a country is determined to have a fuel cycle facility on its territory, a multinational approach may provide a measure of transparency and accountability and be preferable to having such a facility under strictly national control. Moreover, an arrangement in which a state invests in a multinational enrichment facility managed and operated by existing holders of enrichment technology—and in exchange receives guaranteed fuel supplies from that facility but no access to enrichment technology—would involve little proliferation risk and a substantial fuel assurance benefit.

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<sup>73</sup> Frank von Hippel, "Civilian Nuclear Fuel Cycles in Northeast Asia," Program on Science and Global Security, Princeton University, October 28, 2016.

<sup>74</sup> World Nuclear News, "Australian Royal Commission delivers final report," May 9, 2016, <http://www.world-nuclear-news.org/NP-Australian-Royal-Commission-delivers-final-report-0905167.html>.

<sup>75</sup> Fred McGoldrick, "Limiting Transfers of Enrichment and Reprocessing Technology: Issues, Constraints, Options," Belfer Center for Science and International Affairs, May 2011, p. 35, <http://www.belfercenter.org/sites/default/files/legacy/files/MTA-NSG-report-color.pdf>.

## CHAPTER 6

# STRENGTHENING THE NON-PROLIFERATION TOOLKIT

**U.S.** nuclear non-proliferation policy often seeks to influence the behavior of specific countries—for example, pressing Iran to limit its enrichment capacity, persuading South Korea to continue relying on the U.S. extended deterrent rather than pursue its own deterrent, and urging China to take a more rigorous approach toward preventing illicit nuclear procurement. But an equally important, even if lower profile, aspect of U.S. policy is strengthening the non-proliferation regime as a whole—with mechanisms and measures that apply multilaterally or even universally. Such regime-strengthening elements of policy have such objectives as restricting the supply of nuclear materials, equipment, and technology to proliferant countries or non-state actors, deterring and detecting the diversion of such items from a peaceful to military nuclear program, and enhancing the capacity of states around the world to put in place and implement effective non-proliferation controls. These broadly applicable elements—including export controls, interdiction arrangements, IAEA safeguards, U.S. intelligence capabilities, and capacity-building assistance—are the pillars of the global non-proliferation regime. The Trump administration needs to ensure that these essential tools of the non-proliferation toolkit are effective and able to cope with a changing non-proliferation challenge.

### Export controls

The United States has a well-developed, effective national system of export controls. The main policy challenge for Washington is to support the develop-

ment and implementation of strong export controls in other countries and to ensure, primarily through the Nuclear Suppliers Group, that the world's major nuclear suppliers are pursuing common export control policies that meet high standards.

National export control systems and the NSG have sought to adapt to the increasing resourcefulness of illicit procurement networks—updating lists of nuclear items whose export is subject to governmental approval, adopting lists of nuclear-related dual-use items that are subject to approval, and implementing “catch-all” controls that require government approval to export items not on any control list but where there is reason to believe the items are intended to contribute to a nuclear weapons program. The strengthening of worldwide export controls over the last 25 years, especially by the technologically-advanced Western nuclear supplier countries, has greatly restricted access to proliferation-sensitive goods and technologies and forced illicit procurement networks to pay much higher prices, accept long delays, acquire components and subcomponents rather than easier-to-control finished items, and settle for less sophisticated technology.

However, while strengthened controls have impeded transfers of proliferation-sensitive items, they have not stopped them. The performance of many national export control systems throughout the world remains uneven, with shortfalls in both technical capacity and political will. Through diplomatic encouragement, pressure, assistance, and sometimes sanctions, the United States should continue to press for more effective national and multilateral controls.

A key focus of these efforts should be China, which is the world's number one target for illicit procurement today, reflecting its exponential growth in the number of private firms producing goods of proliferation interest. Illicit procurers are both shopping for Chinese-manufactured goods and using China as a base of operations for transshipments, importing items to China and then illegally sending them on to third countries. Beijing has developed an elaborate export control system, but it does not devote sufficient resources to it, and enforcement can be weak. The recently renewed U.S.-China agreement for civil nuclear cooperation contains a requirement for bilateral consultations, which should be used to press for more vigorous implementation of China's own controls as well as U.N. Security Council restrictions on proliferation-sensitive transfers, especially with respect to North Korea and Iran. Washington should not shy away from sanctioning Chinese or China-based entities when they are facilitating proliferation and Beijing authorities are unwilling to take action against them. But real progress can only be made if stopping illicit procurement becomes an issue that is addressed when the highest-level American and Chinese officials meet—as it was in the 1990s, when Chinese transfers to Iran, Pakistan, and North Korea were a major irritant between Washington and Beijing and the focus of senior-level attention.

China is far from the only country with which the United States should make export controls an important bilateral agenda item. The Trump administration should also address effective implementation of export controls in its bilateral engagement with Russia and with the transit and transit/transshipment countries of Southeast Asia and the Middle East.

The United States should also pursue stronger export controls in the NSG. In the last couple of years, the issue of NSG membership—whether to depart from past practice and admit non-NPT states India and Pakistan—has significantly monopolized the work of the NSG. The United States and most other NSG members have supported India's imme-

diately admission, but China and a few others have blocked a consensus decision on India, with some countries resisting membership for non-NPT states and China also opposing India's admission without the admission of Pakistan. The solution now being explored would make non-NPT parties eligible for NSG membership if they meet certain criteria, such as implementing effective export controls and nuclear security measures. Under this approach, India would be admitted soon and Pakistan later, when it demonstrates its allegiance to those criteria. The Trump administration should press for such a result as soon as possible, both because it is important to have those potential nuclear supplying states committed to NSG export control guidelines and because the preoccupation with the membership issue has prevented the NSG from giving much attention to its main area of responsibility—export controls.

The United States should support efforts in the NSG to deal with the North Korea problem, including by encouraging strict enforcement of U.N. Security Council restrictions and exchanging information on the methods, identities, and locations of entities and individuals involved in the DPRK's procurement network. NSG members should also help enforce the JCPOA by discussing the operation of the deal's procurement channel and considering how they can facilitate the appropriate use of the procurement channel for Iran's civil nuclear program while thwarting any Iranian attempts to circumvent the channel for illicit purposes.

The United States should seek to strengthen NSG guidelines, including by making a recipient state's adherence to the IAEA Additional Protocol a condition of nuclear supply (which would require applying pressure to Brazil and Argentina, which have not yet adhered to the AP and have so far blocked an NSG consensus on such a guideline). As discussed in the preceding chapter, Washington should seek a common NSG position that, in their bilateral agreements for civil nuclear cooperation, NSG suppliers should insist on a guarantee from recipients that they will not enrich or reprocess supplied material, or transfer supplied material or equipment

to third countries, without the supplier's consent. In addition, in light of China's abuse of the NSG's full-scope safeguards "grandfather" provision—which allows an NSG member to fulfill nuclear supply contracts with states that do not have full-scope safeguards if the contract was in place in 1992 when the full-scope safeguards requirement was adopted—the NSG should agree explicitly on what cooperation can be legitimately grandfathered and require China to gain an NSG exception for its construction in Pakistan of reactors that were not legitimately grandfathered.

The NSG's Technical Experts Group is responsible for updating the NSG's control lists, both adding to the lists as particular items become the focus of proliferation concern and deleting items from the list as they are no longer of concern or are so widely available that their control is no longer feasible. The U.S. intelligence and technical communities should continue to support the Technical Experts Group in ensuring that the NSG's control lists take fully into account evolving trends in illicit procurement practices and emerging technologies of proliferation relevance, such as pyroprocessing, laser isotope separation enrichment, and additive manufacturing.

## Interdictions

Closely related to export controls in the non-proliferation toolkit are interdictions—that is, stopping proliferation-sensitive, illicit transfers at the transaction stage or when shipments are already underway. In 2003, the George W. Bush administration started the Proliferation Security Initiative, a voluntary multilateral arrangement, currently with over 100 participating countries, which aims to stop illicit trafficking of weapons of mass destruction, their delivery systems, and related materials to and from states and non-state actors of proliferation concern. PSI members develop procedures to facilitate rapid communications among themselves, engage in workshops and field exercises to enhance their ability

to execute interdiction operations, and discuss legal authorities needed to engage in such operations.<sup>76</sup> The principal value of PSI, aside from its capacity-building role, is that it creates a general presumption that its members will cooperate in interdiction operations if the need arises, and it lends a measure of international legitimacy, despite its non-binding legal character, to ad hoc interdictions carried out by one or more states, whether or not portrayed as taking place under the auspices of PSI.

The PSI as an organization does not consider or provide approval for individual interdiction attempts. Indeed, its members rarely hear about them. Almost all nuclear-related (and other WMD-related) interdiction efforts are initiated by the United States, which, usually on the basis of intelligence information, will reach out to another government on an ad hoc basis and seek its cooperation to stop a transaction in progress, search a ship or aircraft under its jurisdiction for illicit cargo, or seize any illicit goods found in the search. The United States places a very high priority on interdictions. It has established a standing, high-powered interagency mechanism that sifts through intelligence and open sources on a 24/7 basis, decides whether intelligence information can be shared without compromising sources and methods, and determines whether the best way to approach another government is through diplomatic (Department of State) or intelligence (CIA) channels.

Interdictions are a vital non-proliferation tool. However, by their nature, they can only be effective occasionally. They depend on receiving timely, specific, and sharable information about transactions being negotiated or impending shipments. And they depend on gaining the cooperation of other governments, some of which may be reluctant to take action against their own companies or citizens, may not trust the U.S.-supplied information, may not agree that the goods in question are prohibited, may not think they have sufficient legal authority to intervene, may wish to avoid disturbing relations

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<sup>76</sup> Department of State, "Proliferation Security Initiative," <https://www.state.gov/t/isn/c10390.htm>.



with a third country that might be embarrassed by a seizure, or may believe that cooperating in such searches and seizures may undermine the commercial competitiveness of their port. For the United States, gaining the cooperation of traditionally friendly states that strongly support non-proliferation goals is relatively easy. But gaining the cooperation of other states is often much more difficult or simply not possible, which is why effective national export control systems are the front line of preventing access to proliferation-sensitive materials and equipment and why interdictions serve as a backup when illicit procurement networks succeed in circumventing those control systems.

The Trump administration should take an assertive approach toward non-proliferation interdictions. It should urge key states to put in place the necessary national legal authorities and bureaucratic structures to facilitate interdiction cooperation; use sanctions tools to name and penalize individuals and entities involved in illicit procurement; press China and other key countries to clamp down on illicit networks operating in their territory; and work through the PSI to strengthen its members' commitment to engaging in interdiction operations and their readiness and capabilities to do so.

U.N. Security Council resolutions dealing specifically with countries of proliferation concern, especially North Korea and Iran, have provided legally binding authorities under Chapter VII of the U.N. Charter to inspect cargoes in certain circumstances. For example, Security Council resolution 2270 “decides that all States shall inspect the cargo within or transiting through their territory, including in their airports, seaports, and free trade zones, that has originated in the DPRK, or that is destined for the DPRK . . . for the purpose of ensuring that no items are transferred in violation of” several Council resolutions prohibiting nuclear- or ballistic-missile-related activities in North Korea.<sup>77</sup> Such country-specific resolutions have often provided a powerful basis for

convincing hesitant partners that there is sufficient legal authority for them to cooperate with the United States in interdicting sensitive transfers.

However, such country-specific resolutions may be of limited value in future interdiction cases. In particular, they address illicit cargoes of only one country (e.g., North Korea), and they require cooperation only if the suspect cargo is located within a cooperating partner's national jurisdiction (its ports, airfields, free trade zones, territorial seas, or airspace). They do not permit searching a ship on the high seas, except in a case where the permission of the flag state has been obtained. The Trump administration might explore the possibility of a new Security Council resolution that would authorize U.N. members to search a ship or aircraft, regardless of nationality and even if it is located in international waters or airspace, if there is reason to believe it is carrying nuclear weapons or other WMD or materials or equipment intended for use in producing WMD. The United States could expect resistance to such a proposal in the Security Council. There are only a few cases in international law where boarding a ship on the high seas is permitted, including ships engaged in piracy or the slave trade.<sup>78</sup> But with the Security Council having determined on previous occasions that the proliferation of weapons of mass destruction and their means of delivery constitutes a threat to international peace and security, such a broader interdiction authority would appear justified and would serve as a useful tool to thwart the proliferation of WMD to additional states and non-state actors.

## IAEA safeguards

The IAEA safeguards system plays an indispensable role in verifying compliance with the nuclear non-proliferation regime—deterring and detecting not only the diversion of declared civil nuclear materials and equipment to a nuclear weapon program but also the use of undeclared nuclear materials,

<sup>77</sup> UN Security Council, Resolution 2270, March 2, 2016, [http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s\\_res\\_2270.pdf](http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_res_2270.pdf).

<sup>78</sup> United Nations Convention on the Law of the Sea, Article 110. [http://www.un.org/depts/los/convention\\_agreements/texts/unclos/unclos\\_e.pdf](http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf).

activities, and facilities. If the IAEA is to remain a critical non-proliferation tool in an increasingly challenging international environment, the United States will have to maintain and even increase its traditionally strong support for the agency.

- A key challenge will be ensuring that the IAEA has the financial and human resources it needs, especially given the demands placed on it by the JCPOA and its enhanced role in nuclear security. While the Trump administration will be taking a close look at U.S. financial support for international organizations across the board, it should recognize that the IAEA is exceptional in providing a major boost to U.S. security and should not be subject to the same budgetary disciplines (typically “zero real growth”) applied to U.S. support for other organizations whose contributions to U.S. national security are much less significant. Although increased U.S. funding would largely be provided in voluntary, or “extra-budgetary,” contributions, Washington should press for significant growth in the agency’s regular budget, which would divide the burden with other member states and help the Secretariat plan more efficiently. In support of an increased regular budget, the United States will need to lean hard on such allies as France, Germany, and the United Kingdom, which, despite their strong support for the agency’s mission, have taken a miserly approach to IAEA funding. Moreover, in light of G-77 demands for balance between agency safeguards and technical cooperation (TC) programs, it will also have to support an increase in TC (although much more modest than developing country members would prefer).
- Beyond funding, there are other ways the United States can enhance the IAEA’s capabilities. It has traditionally provided training for agency inspectors; it has supplied intelligence information that has helped the agency carry out its verification mission; and its laboratories have developed new safeguards technologies

and provided training and equipment to enable the IAEA to incorporate them. One candidate for such U.S. support would be to explore the feasibility and cost-effectiveness of a wide area environmental sampling procedure that could gain IAEA Board approval and position the agency to take advantage of the provision of the Additional Protocol that requires states to implement wide area environmental sampling once the Board accepts a procedure.

- The United States should encourage the agency to fully utilize the tools it has. Under Comprehensive Safeguards Agreements, the IAEA Secretariat may request a “special inspection” and, if the IAEA Board considers the situation “essential and urgent,” the board can require that a state submit to a special inspection or else be reported to the U.N. Security Council. But preferring to make the process as consensual as possible and avoid confrontation, the IAEA has sought special inspections only rarely and not in cases where they appeared warranted, including Iran and Syria. The longer the tool is unused, the greater the stigma that will be attached to its use and the more reluctant the agency will be to employ it. The IAEA should be less hesitant to call for special inspections.
- The IAEA Secretariat should not wait for non-compliance to express its concern about a state’s behavior. Pierre Goldschmidt, former IAEA deputy director general for safeguards, suggests that in the restricted (non-public) section of its annual Safeguards Implementation Report, the Secretariat should report to the IAEA Board on any difficulties it has encountered that may raise proliferation concerns, including by naming states that have not fully cooperated with the agency.<sup>79</sup>
- The Additional Protocol is a critical verification tool, but several states with significant nuclear programs or plans for significant programs

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<sup>79</sup> Pierre Goldschmidt, “Concrete Steps to Improve the Nonproliferation Regime,” Carnegie Papers Number 100, April 2009.

have not yet adhered. The United States and other strong non-proliferation supporters have frequently called for making adherence to the AP the universal safeguards standard, but they have encountered resistance from countries such as Brazil and Argentina as well as some NAM states, which argue that NNWSs should not be required to accept an additional obligation when NWSs are not fulfilling their Article VI commitment to nuclear disarmament. The Trump administration should make a major push for universal adherence to the AP, including (as recommended above) by calling on the NSG to make adherence to the AP by a recipient state a condition for nuclear supply.

- Information about safeguards-relevant procurement can help the agency make assessments about compliance with safeguards obligations, as recognized by the agency's statute, which says that "Each member should make available such information as would, in the judgment of the member, be helpful to the Agency."<sup>80</sup> The Additional Protocol already calls for reporting all nuclear exports to the agency, but the provision of additional information would be useful, including all dual use exports. Information on denials of export requests, which can provide clues about the intentions of entities making suspicious requests, might be provided on a less formal basis.
- Both to promote an efficient use of its monitoring resources, especially in the case of large civil programs, as well as to gain insights about a state's capabilities and intentions that cannot be acquired through traditional safeguards, the IAEA has been developing analytical approaches that draw on information from a wide range of sources (including open sources and intelligence provided by member states) and that seek to develop a composite picture of a state's programs and actions that are relevant to its safeguards obligations. Washington should work with the

agency to further develop and institutionalize a structured approach to safeguards analysis that can better inform how inspectors in the field implement the more expansive inspection authority provided under the Additional Protocol. Newer analytic approaches have come under criticism for a variety of reasons, including the claim by some states that they are intended to lighten the safeguards burden on advanced states such as Japan and Canada, as well as the charge by Russia that they give undue weight to biased Western intelligence and open sources at the expense of traditional safeguards. The United States should support the agency's analytic methods, working closely with the agency and others to maintain confidence in their legitimacy and nondiscriminatory character.

- The United States should seek to incorporate some of the innovative verification features of the JCPOA into the general IAEA safeguards system. There is likely to be resistance to this. Both U.N. Security Council resolution 2231 and a December 2015 IAEA Board resolution state that the provisions of the JCPOA should not be considered precedents for the IAEA's standard safeguards practices. These markers may reflect a reluctance of IAEA members to accept additional safeguards burdens, a Secretariat concern about being saddled with unfunded new responsibilities, and an Iranian desire eventually to be free from non-standard safeguards practices. Nonetheless, if the JCPOA measures demonstrate their value and cost-effectiveness, support for them could increase. Among the measures that should be considered are greater accounting of uranium mines and mills, safeguarding of yellowcake, monitoring of centrifuge production, greater use of online remote monitoring at enrichment and other facilities, and a timeline for access to undeclared sites under the AP. A JCPOA feature that addresses a long-recognized omission in the NPT is an explicit prohibition on "weaponization" activities related to the de-

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<sup>80</sup> International Atomic Energy Agency, "The Statute of the IAEA," <https://www.iaea.org/about/statute>.

velopment of a nuclear explosive device and on procurement of equipment used specifically in those activities. Washington should call on NPT parties to adopt such prohibitions on weaponization and, if successful, require the IAEA to monitor compliance with them, even when no nuclear materials are present.

## Intelligence

Information from intelligence sources is a vital non-proliferation tool. Intelligence is essential to receiving early signs of a country's interest in nuclear weapons, to detecting illicit efforts to acquire technologies needed for the bomb, and to evaluating whether a country is living up to its non-proliferation commitments. The IAEA safeguards system is critical to deterring and detecting violations of a country's safeguards obligations. But intelligence services have caught things that the IAEA has missed, such as Iran's underground enrichment facility at Fordow and Syria's plutonium production reactor at al-Kibar. Major improvements in IAEA safeguards, especially the Additional Protocol, have reduced the likelihood of undetected violations. However, not all countries adhere to the AP, and even in countries that do, intelligence information provides a valuable supplement to agency safeguards.

Intelligence, of course, is also fallible, most notoriously the U.S. assessment in 2003 of Iraqi WMD, and it was Israeli, not U.S., intelligence that discovered the Syrian nuclear reactor. But the U.S. intelligence community has gone to great lengths in recent years to expand its sources of information (including social media and other publicly available sources) and to adopt new analytic methods (e.g. "alternative competing hypotheses") to ensure that possible explanations for available information are not overlooked. Moreover, in the President's National Intelligence Priorities, in which the U.S. government regularly determines the collection and analytic resources it will allocate to various national security goals, preventing nuclear proliferation and nuclear terrorism is repeatedly assigned the highest category.

The Trump administration should continue to give it top priority.

Intelligence is valuable not just for monitoring and providing a better understanding of proliferation-related events; it also enables the government to take action to impede proliferation—to press other governments not to approve irresponsible exports, to tip off port authorities about illicit cargoes, to warn other supplier governments about procurement requests from illicit traffickers, to encourage the IAEA to investigate possible infractions, to provide a legal basis for the imposition of sanctions, and so on. While the intelligence community has a legitimate need to ensure that intelligence sharing does not compromise its sensitive sources and methods, the policy community also has a legitimate need to use intelligence information with foreign governments and international organizations to serve non-proliferation objectives. In most cases, it will be clear whether intelligence can be shared without unduly risking sources and methods. But for cases where the intelligence and policy communities have different views, a senior-level mechanism should be established to rule on whether, how, and with whom intelligence information can be used to advance policy goals.

## Capacity building

The United States and many other countries have rigorous export control systems, nuclear security arrangements, and other non-proliferation measures in place. But the global non-proliferation regime will not be effective if illicit procurement networks, terrorists, and other bad actors are able to take advantage of weak, non-existent, or lackadaisically-enforced controls in other states. A key component of U.S. non-proliferation policy has therefore been to work with governments around the world to help them develop and implement non-proliferation controls.

U.N. Security Council resolution 1540 has given a huge boost to international capacity building efforts. Adopted unanimously in 2004, resolution 1540 imposes legally binding obligations on all U.N. members

to develop and enforce a full range of non-proliferation controls, including export controls, physical protection measures, border controls, and measures to prevent illicit trafficking. The stated purpose of resolution 1540 was to prevent non-state actors from acquiring WMD or WMD delivery systems, but it was recognized that the mandated controls were also intended to prevent additional countries from acquiring them. Resolution 1540 obliges all U.N. members to report on their progress in putting the required controls in place, and a committee of experts was established to assist countries in identifying gaps and in requesting assistance to close the gaps.

In urging other countries to adopt and enforce effective controls, Washington invariably cites their obligation to do so under resolution 1540. To assist them, the United States has created a range of programs that help countries establish necessary legal, regulatory, and bureaucratic structures; provide equipment and training; and share best practices and other advice. These U.S. capacity building programs—funded and managed by several government agencies, particularly the departments of State, Energy, and Defense, and supported by others—cover such areas as export controls (including licensing, enforcement, industry outreach, and commodity identification), border security, physical protection, and nuclear smuggling. In addition to its bilateral assistance programs, the United States plays a leading role in multilateral activities that also serve capacity building objectives, including the Global Initiative to Combat Nuclear Terrorism, the Proliferation Security Initiative, and the Global Partnership against the Spread of Materials and Weapons of Mass Destruction.

The United States is not alone in these capacity building efforts. The European Union and Japan are among the other most active supporters of non-proliferation assistance programs. Taken together, these programs have done much to raise consciousness of the proliferation threat and strengthen the international community's ability to cope with the threat. They provide a substantial national security payoff at a modest price. They deserve continuing support.

## CHAPTER 7

# SUSTAINING MOMENTUM IN NUCLEAR SECURITY

There is a strong bipartisan consensus that preventing terrorists from getting their hands on nuclear weapons or the materials needed to build them is a top national security priority. It has been kept at the top of the national security agenda by indications that well-resourced terrorist groups remain interested in carrying out mass casualty attacks. Al-Qaida is believed to have made numerous attempts to purchase stolen nuclear material and recruit nuclear experts, and the Islamic State's (ISIS) monitoring of a senior official at a Belgian facility containing highly enriched uranium has been viewed as an alarming sign of that group's interest in nuclear weapons.<sup>81</sup> The current U.S.-backed campaign to shrink and hopefully eliminate the Islamic State's territorial and resource base in Iraq and Syria will reduce its capacity to mount a purposeful effort to produce nuclear weapons, but the ability of ISIS, its affiliates, and other terrorist organizations to operate in other parts of the world will require continued vigilance against the threat of nuclear terrorism.

The surest way of preventing nuclear terrorism is denying the terrorists access to nuclear weapons and bomb-making materials. Tremendous strides were made in the last 25 years in reducing, consolidating, and securing those items, including during the heyday of U.S.-Soviet/Russian cooperation and over the course of the four Nuclear Security Summits initiated by President Obama. But much of the progress achieved to date has been the comparatively easy part—such as removing unwanted materials, shutting down aging facilities, carrying out straight-

forward physical security upgrades, or converting relatively low-performance research reactors to operate on low-enriched uranium fuels. Much of the work that remains is either technically difficult (e.g., designing low-enriched fuels for high-performance research reactors) or politically sensitive (e.g., applying nuclear security guidelines to nuclear materials in military programs, persuading certain countries to part with weapons-usable materials, addressing unfinished business in Russia).

Having heads of government participate directly in the Nuclear Security Summit (NSS) process ensured that nuclear security received the full attention of national bureaucracies and provided strong incentives for all participating countries to come to the table with something positive to contribute. The result was a large number of tangible national actions and collective commitments that would have been difficult if not impossible to realize in the absence of the political and time pressures created by summit-level meetings at two-year intervals.

The current challenge is to sustain the momentum on nuclear security now that the summit process has ended. The organizers of the NSS process understood this problem and, at the 2016 Washington meeting, pressed for and achieved agreement on “action plans” for five international bodies with important responsibilities in the field of nuclear security—the United Nations, IAEA, INTERPOL, Global Initiative to Combat Nuclear Terrorism, and Global Partnership Against the Spread of Weapons

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<sup>81</sup> Belfer Center for Science and International Affairs, “Preventing Nuclear Terrorism,” *op. cit.*, p.ii.



and Materials of Mass Destruction. A Nuclear Security Contact Group, open to participation by countries that did not attend the summit meetings, was established to help coordinate and give impetus to the overall post-NSS effort.

## Concerns about post-NSS backsliding

Early returns on sustaining momentum, however, are not very promising. Officials attending the September 2016 IAEA General Conference and the December 2016 ministerial-level IAEA conference on nuclear security sensed a backsliding on NSS commitments by some countries. Although the April 2016 NSS event endorsed giving the IAEA a more central role in the field of nuclear security and increasing its regular budget for nuclear security programs, some delegations at the fall 2016 IAEA meetings objected, arguing that agency programs in nuclear security should be funded by voluntary contributions rather than the regular budget and even questioning whether the IAEA has a mandate in the field of nuclear security.

Especially disturbing are signs that the IAEA debate on nuclear security may begin to resemble polarized international debates on disarmament and other issues. An important reason for the success of the NSS process was that it strictly limited its agenda to preventing nuclear terrorism and strengthening nuclear security—goals strongly shared by all participants—and ruled out consideration of such divisive issues as the pace of disarmament and restrictions on the spread of dual-use nuclear technologies. But at recent IAEA meetings, some members of the non-aligned world have maintained that progress on nuclear security should be linked to progress on nuclear disarmament and that an increased agency focus on nuclear security, including a greater allocation of financial and human resources, would detract from efforts to promote the peaceful uses of nuclear energy.

U.S. officials say they have not seen evidence so far of backsliding on national steps that governments

committed to take during the NSS process. But they express concern that resistance to implementing the NSS-approved action plan for the IAEA may signal a deterioration of the 52-nation unity displayed during the NSS process and an indication of what happens when consideration of nuclear security descends from the summit level to lower-level officials, especially those accustomed to fighting familiar ideological battles.

## Building on the NSS process

Much of the impetus over the last 25 years for strengthening nuclear security globally has come from the United States—beginning with the Nunn-Lugar cooperative threat reduction programs of the early 1990s and continuing through the last NSS meeting in April 2016. Without active U.S. leadership in the period ahead, the momentum attained in recent years will slacken off and remaining vulnerabilities will go unremedied.

As the chief sponsor of the NSS process, the United States should seek to ensure that the commitments made during the process are fulfilled and that the high-level focus and international coordination fostered by the process are sustained. It should encourage full implementation of the NSS-approved actions plans for the five nuclear security-related international bodies. In particular, it should support an enhanced nuclear security role for the IAEA, pressing for funding more of the IAEA's nuclear security work from the agency's regular budget and, where necessary, making extra-budgetary contributions to promote such critical programs as its peer review missions (namely, its International Physical Protection Advisory Services and Nuclear Security Advisory Services).

An NSS accomplishment deserving special attention is the Strengthening Nuclear Security Implementation initiative undertaken by 35 states at the 2014 summit (joined subsequently by China, India, and Jordan), in which those countries committed to implementing the IAEA's nuclear security recom-

mentations in their own national programs and to accepting regular reviews of their security arrangements.<sup>82</sup> It will be important for other countries with significant nuclear holdings to adhere to this pledge and for all participating governments to report on the progress they have made in fulfilling it.

The Nuclear Security Contact Group should meet regularly to assess progress made on the five action plans and other NSS commitments and to consider what more needs to be done. However, while such expert-level gatherings are essential, there will be a need to provide impetus periodically at the senior-most levels of government. Heads of state and government could assemble, perhaps every four years, to address nuclear security on the margins of G-20 summit meetings.<sup>83</sup>

## Nuclear security tasks in the period ahead

Much of the U.S. nuclear security agenda in the years ahead will involve objectives that administrations of both parties have been pursuing for years:

- Converting remaining HEU-fueled research and isotope-production reactors throughout the world to operate on LEU fuel, with a particular focus now on designing and licensing high-density LEU fuels for high-performance reactors, particularly in Western Europe;
- Repatriating remaining HEU-bearing fuels to their countries of origin (mainly the United States or Russia) or, where that is not yet possible, ensuring that they are well protected;
- Consolidating sites in various countries where nuclear weapons or weapons-usable nuclear materials are located, eliminating such sites where possible, and upgrading security at sites where such weapons or materials remain;
- Impeding nuclear smuggling by assisting other countries, especially those located along potential smuggling routes, with training and the provision of fixed and mobile nuclear detection equipment at borders, ports, and airports;
- Discouraging the growth, and encouraging the reduction, of stocks of separated civil plutonium, including by promoting a “no accumulation” norm (i.e., no production of more plutonium unless there is a readily available path for its use);
- Urging states with fissile material in military programs to apply international nuclear security guidelines, most of which explicitly pertain only to civil nuclear material, to their military stocks as well, recognizing that states are likely to be less transparent about measures for securing their military materials;
- Expanding international programs to build and sustain a “nuclear security culture”—aimed at ensuring that personnel at all levels who are responsible for nuclear security understand and do not underestimate the threat, engage in constant efforts to evaluate and improve their capabilities, and recognize that the job of nuclear security is never done; and
- Encouraging wider adherence to nuclear security treaties, including the Convention on the Physical Protection of Nuclear Material and its 2005 amendment and the International Convention for the Suppression of Acts of Nuclear Terrorism.

## Rebuilding cooperation with Russia

The Trump administration’s goal of improving relations with Russia may provide an opportunity to

<sup>82</sup> The text of the Joint Statement on Strengthening Nuclear Security Implementation is contained in INFCIRC 869. International Atomic Energy Agency, INFCIRC 869, October 22, 2014, <https://www.iaea.org/sites/default/files/publications/documents/infcircs/infcirc869.pdf>.

<sup>83</sup> William Tobey, *op. cit.*, p. 13.

rebuild bilateral cooperation on nuclear security. Given the vast amounts of nuclear material, both civilian and military, possessed by the two countries and their unrivaled experience in working to secure it, the United States and Russia can be co-leaders in strengthening international nuclear security. Bilateral cooperation cannot, and need not, return to the days of the donor-recipient relationship that characterized their early threat reduction work and eventually led to Russian resentment and the termination of their efforts. It must instead be based on a partnership of equals and could be embedded in a broader, mutually beneficial framework involving both civil nuclear energy cooperation (e.g., joint research and development on advanced fuel cycles) as well as nuclear security initiatives.<sup>84</sup>

Despite the sharp downturn in relations and the termination of virtually all nuclear security cooperation in recent years, the two major powers have managed to work together well in the Global Initiative to Combat Nuclear Terrorism, a voluntary multilateral partnership of 86 countries which the United States and Russia founded in 2006 and co-chair, which seeks to build the capacity of its members to prevent, detect, and respond to acts of nuclear terrorism. In addition to continuing the GICNT's activities in such areas as nuclear detection, forensics, response, and mitigation, Washington and Moscow might seek to expand its nuclear security mission, including by providing a forum for discussion of nuclear security principles and best practices.

Returning to a more cooperative relationship could enable the United States and Russia to revisit some projects that have been suspended. They could, for example, decide to resume their joint research on the feasibility of converting five additional Russian research reactors to operate with LEU fuel, or they could resurrect their agreement for each to dispose of 34 tons of weapons-grade plutonium (the Plutonium Management and Disposition Agreement), even if the United States decides on a new disposi-

tion path that Russia considers more reversible and therefore less satisfactory than the path that had been agreed. And they could complete the collaborative work, never really suspended, of repatriating Russian-origin HEU from third countries, including Belarus and Kazakhstan.

## Cooperation with other countries

While seeking to restore U.S.-Russian cooperation on nuclear security, the Trump administration should also continue and expand bilateral nuclear security engagement with other key nuclear powers. Cooperation with China has been especially promising. Following successful U.S.-Chinese collaboration in converting China's Miniature Neutron Source Reactors (MNSR) from HEU to LEU fuel, the two countries agreed to work together and with the IAEA to convert Chinese-supplied MNSR reactors in Ghana and Nigeria, and Beijing announced its readiness to convert all remaining Chinese-origin MNSRs worldwide. The United States and China also worked together in establishing a world-class nuclear security Center of Excellence in Beijing, which will train China's nuclear security personnel and serve as a venue for bilateral and regional best practice exchanges.<sup>85</sup> Facing a serious extremist threat within its borders, Pakistan has taken nuclear security very seriously, and its longstanding cooperation with the United States has been productive. The United States also has a nuclear security dialogue with India, although cooperation remains at a low level, and Indian authorities do not appear as seized with their nuclear security responsibilities as their Pakistani counterparts.

The Trump administration will be facing strong budgetary pressures across the board, but given its commitment to preventing WMD terrorism, it should not shortchange nuclear security. U.S. spending on international nuclear security programs has been on a steady decline in recent years. The

<sup>84</sup> Belfer, *op.cit.*, p. ix.

<sup>85</sup> "U.S.-China Joint Statement on Nuclear Security Cooperation," The White House, March 31, 2016, <https://obamawhitehouse.archives.gov/the-press-office/2016/03/31/us-china-joint-statement-nuclear-security-cooperation>.

Department of Energy's Defense Nuclear Non-Proliferation programs (excluding the mixed oxide, or MOX, program and nuclear counterterrorism) declined from \$1.97 billion in fiscal year 2013 (enacted) to \$1.27 billion (requested) in fiscal year 2017.<sup>86</sup> While much of the decline in overall U.S. government international nuclear security programs can be attributed to the completion of expensive security upgrades in Russia as well as the suspension of programs in Russia, the reduced funding level has postponed or slowed important work.<sup>87</sup> Unless this trend is reversed, it will severely constrain what the administration will be able to do in the field of nuclear security.

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<sup>86</sup> The Center for Arms Control and Non-Proliferation, "FY 2017 Budget: Nuclear Non-Proliferation," February 10, 2016, <http://armscontrolcenter.org/defense-non-proliferation-funding-comparisons/>.

<sup>87</sup> Belfer, *op.cit.*, p. vii.

## CHAPTER 8

# REINFORCING THE NPT

Polarization within the NPT is not new. Ever since the treaty's entry into force, its membership has been divided. While the actors on opposing sides of the divide have shifted somewhat from issue to issue, the main fault line has been between the NWSs and their NNWS security partners on the one side and most NNWSs, especially of the NAM and developing world, on the other. The latter have pressed the NWSs for more rapid progress on nuclear disarmament (to comply with Article VI and to reduce and eventually eliminate the NPT's main discriminatory feature) and resisted constraints on the peaceful uses of nuclear energy, including access to fuel cycle technologies. The former have given priority to measures for impeding the "horizontal" proliferation of nuclear weapons capabilities, including IAEA safeguards and constraints on access to sensitive technologies, and have defended their record on nuclear disarmament. It has been the "haves" (those having nuclear weapons or nuclear umbrellas and civil nuclear technology) vs. the "have-nots" (those without nuclear weapons or umbrellas or significant civil nuclear programs).

The have-nots have argued that the haves have not lived up to the "NPT bargain"—the notion that NNWSs gave up their right to possess nuclear weapons in exchange for the promise of nuclear disarmament and unfettered access to civil nuclear technology. While this version of the bargain has been repeated so many times that it has become an accepted tenet of NPT lore, it is misleading. It is true that NNWSs genuinely support nuclear disarmament and want to enjoy the benefits of the peaceful uses of nuclear energy—and achieving those

goals is a large part of the value they see in belonging to the NPT. But most NNWSs joined the treaty primarily because they concluded they did not need nuclear weapons (either because they did not face a severe threat or they relied on security assurances from nuclear powers), and they bought into the view that they and the international community at large were better off in a world with fewer nuclear-armed states.

That is why, despite NNWS dissatisfaction with the pace of disarmament and concern that access to nuclear technologies has been unduly constrained, the NPT and the non-proliferation regime have been so resilient—why the number of states possessing nuclear weapons has not changed for a quarter century and only one country (North Korea) has left the treaty. Indeed, there has long been a disconnect between the real-world success of the treaty in arresting proliferation and the pessimistic assessments of a failing NPT regime that one often hears at polarized gatherings of NPT parties, particularly at NPT review conferences that take place at five-year intervals.

### Could discontent hurt the regime?

Today, however, there is a growing risk that sharp divisions among NPT parties could actually begin to erode the effectiveness of the non-proliferation regime, not just produce discordant rhetoric and contentious review conferences. While NPT review conferences have failed to achieve consensus final

documents roughly half the time—with little adverse effect on the viability of the regime—the inability to arrive at a consensus at the acrimonious 2015 Review Conference was especially bitter, with many participants wondering whether the sense of common purpose among the parties has been irreparably damaged. A standoff has solidified within the NPT membership that is impeding further improvements in the non-proliferation regime, with key NNWSs resisting measures to strengthen barriers against proliferation as long as progress is stalled on nuclear disarmament.

The most tangible manifestation of discontent within the NPT membership has been the advent of the movement to conclude a treaty banning nuclear weapons. The ban movement grew out of the convening of three international conferences to consider the humanitarian consequences of the use of nuclear weapons and reflected mounting frustration by many NNWSs with the current gridlock in both U.S.-Russia and multilateral nuclear arms control. By a vote of 113 to 35, with 13 abstentions, the 2016 U.N. General Assembly called for negotiations to begin in March 2017 on a legal instrument to prohibit nuclear weapons. Among the states voting against the resolution were the United States and the other NPT NWSs, except for China, which abstained.<sup>88</sup>

The NPT parties are sharply divided on the implications of a ban treaty, including its impact on the NPT. Advocates of the ban treaty maintain that, by accelerating progress toward nuclear disarmament, it will complement and strengthen the NPT. Opponents contend that it will not result in progress toward disarmament, which they believe can only advance through a step-by-step process as international conditions permit. They assert that the ban treaty could actually trigger proliferation by undermining the security assurances that have enabled certain states to forgo nuclear weapons. Another concern, assuming a ban treaty would not contain

the NPT's safeguards requirements or other critical controls, is that a state contemplating the acquisition of nuclear weapons could withdraw from the NPT, adhere to the ban treaty in an effort to demonstrate its supposed non-proliferation *bona fides*, and later begin moving covertly toward nuclear weapons without the scrutiny provided by the NPT.<sup>89</sup>

A challenge for the new U.S. administration will be to reinforce the NPT, discourage defections from it, and minimize the polarization among its members that has impeded practical steps to strengthen the non-proliferation regime. There are no silver bullets here. The turbulent international security environment prevailing today is hardly conducive to reconciling the diverse interests of NPT parties. But in an effort at least to prevent further erosion of the NPT's authority, the administration should consider the following actions.

## Ban treaty

The United States, the other nuclear powers, and their NNWS supporters cannot stop the ban treaty. Its advocates have too much momentum and too many votes. Some sort of ban treaty will be negotiated and will enter into force. Mounting a fight to stop it would not succeed; it would only result in further polarization, generate more publicity and sympathy for the ban movement, and increase the risk of undermining domestic support for nuclear deterrence in some key countries, including NATO countries that host U.S. nuclear weapons. The U.S. goal should be to avoid as much damage as possible.

The United States should not participate in the ban negotiations (or adhere to the ban treaty once it is concluded). But in exchange for not mounting a campaign to block the process and forcing a confrontation, which most ban supporters probably wish to avoid, Washington can exercise some influence on the outcome, perhaps indirectly through

<sup>88</sup> UN General Assembly, Resolution 71/258, "Taking Forward Multilateral Nuclear Disarmament Negotiations," January 11, 2016, [http://www.un.org/en/ga/search/view\\_doc.asp?symbol=A/RES/71/258](http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/71/258).

<sup>89</sup> Adam Mount and Richard Nephew, "A nuclear weapons ban should first do no harm to the NPT," *Bulletin of the Atomic Scientists*, forthcoming.



friendly NNWSs participating in the negotiations. It should seek to ensure a very short “normative” treaty—a document that expresses the aspirations of its supporters but does not seek to create a new legal regime at variance in any way with the NPT. To avoid the potential problem of a country withdrawing from the NPT and taking advantage of less restrictive provisions of the ban treaty, the ban treaty should require all of its parties to be members of the NPT in good standing.<sup>90</sup> And rather than seek to delay or draw out the negotiating process, which would guarantee the continuing prominence of the ban treaty on the international non-proliferation agenda at the expense of other subjects, the United States should encourage the negotiators to get it over with as soon as possible, preferably in 2017.

## NPT Article VI

The improvement in bilateral relations that the governments in Moscow and Washington have said they wish to promote would certainly create a more promising climate for exploring further reductions in nuclear arms. But even in a more favorable climate, U.S.-Russian differences on the components of strategic stability—with Moscow unwilling to consider further nuclear arms cuts unless non-nuclear strategic capabilities (e.g., missile defenses, conventional prompt global strike missiles) are taken into account—will be an impediment to agreement on further reductions. So will Russia’s violation of the INF Treaty and Moscow’s counter-accusation of U.S. violations.

If additional reductions in deployed strategic weapons and delivery systems below New START levels are too difficult for the time being, there are other ways that the United States and Russia can demonstrate their commitment to NPT Article VI and to reducing the risk of nuclear war. They can return to their past practice of engaging in bilateral, high-level strategic stability talks, addressing their current differences on the components of strategic stability and

perhaps laying the groundwork for further strategic reductions as political conditions improve. Under Article VI, moreover, disarmament need not be confined to deployed strategic systems. Washington and Moscow could take parallel steps to reduce their inventories of non-deployed nuclear weapons, hasten the rate of warhead dismantlement, or declare additional amounts of fissile material formerly allocated to their nuclear weapons programs as excess to their nuclear weapons needs. At a time when many observers believe Russia has increased its reliance on nuclear weapons and may be prepared to initiate their use against NATO forces seeking to reverse Russian aggression in Eastern Europe, the two major nuclear powers should explore confidence-building measures and other means of reducing current nuclear tensions and demonstrating that they appreciate, as Presidents Ronald Reagan and Mikhail Gorbachev did, that a nuclear war cannot be won and should never be fought.

Many NNWSs party to the NPT are understandably impatient with the pace of disarmament. But in the current international circumstances, they should recognize that the most immediate priority is not further reductions; it is preventing a new nuclear arms race and reducing the likelihood of nuclear conflict. And even if it should take time to get bilateral and multilateral nuclear arms control back on track, they should refrain from making the current lull in the disarmament area an excuse for withholding support for additional measures to strengthen the barriers to proliferation of nuclear weapons capabilities.

## NPT review process

The approach NPT parties have taken to reviewing the treaty every five years has contributed to paralysis and discord in the non-proliferation regime. At every NPT Review Conference (Revcon) since the first one in 1975, the parties have adopted an all-or-nothing approach to the conference outcome—either the Revcon’s final document would be

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<sup>90</sup> Mount and Nephew, *op. cit.*

approved by consensus or there would be no conference final document. Many NNWSs, especially from the NAM, figured that such an approach would give them leverage to pressure other parties—usually the NWSs and usually on disarmament issues—to make concessions for the sake of a positive conference outcome. But the tactic has not worked. The NWSs have been unwilling to compromise what they considered to be core national interests for the sake of a consensus document. As a result, Revcons have not produced consensus outcomes half the time.<sup>91</sup>

The costs of insisting on all or nothing have been high. Instead of focusing on practical proposals for strengthening the treaty, the time and energy of Revcons have typically been devoted to trying to negotiate acceptable language on a small number of the most controversial issues. The process has usually produced brinkmanship and polarization rather than compromise. The contentious character of the proceedings and the frequent inability to achieve a consensus outcome have conveyed the misleading impression that the NPT is failing.

At the Revcon in 2020, the 50th anniversary of the NPT, the parties should try a different approach. They should strive for as much consensus as possible. But they should not insist on a comprehensive, consensus final document as the only possible conference outcome. The conference final report should contain proposals that enjoy a consensus as well as those that do not, both of which would be available for consideration by the parties going forward. Abandoning the all-or-nothing approach would free up time to do what Revcons are supposed to do—examine the operation of the treaty, assess international and technological developments that affect non-proliferation objectives, and identify, debate, and seek common ground on practical proposals for strengthening the non-proliferation regime. And it

would minimize the brinkmanship and recriminations that have poisoned past gatherings of NPT parties.<sup>92</sup>

## NPT withdrawal

One of the NPT's most serious weaknesses is that, if a party exercises its right under Article X to withdraw from the treaty, its comprehensive safeguards agreement with the IAEA automatically lapses, enabling it without legal restriction to use its previously safeguarded nuclear materials, equipment, and facilities to produce nuclear weapons. No one challenges the right of NPT parties to withdraw if, as Article X states, they provide three months' notice and indicate that "extraordinary events related to the subject of the Treaty have jeopardized [their] supreme interests." But they should not be able to leave the treaty and use what they acquired ostensibly for peaceful purposes as an NPT member for the purpose of building nuclear weapons.

This loophole has been recognized for many years. To address the loophole, an NSG guideline calls on its members, as a condition of nuclear supply, to require assurances that, if existing safeguards are terminated (e.g., as a result of NPT withdrawal), the recipient will bring into force backup safeguards that would apply to the transferred items in perpetuity.<sup>93</sup> United Nations Security Council resolution 1887 of September 2009 similarly encourages all states to adopt such a condition of nuclear export and also calls on them to gain agreement of recipients that, in the event existing safeguards are terminated, the supplier would have the right to require the return of all transferred items.<sup>94</sup>

The problem with these supplier-driven requirements for "backup" or "irreversible" safeguards is that

<sup>91</sup> Consensus final documents did not prove achievable at four of the nine review conferences held to date: 1980, 1990, 2005, and 2015. At the 1995 review and extension conference, the parties could not reach a consensus on a comprehensive document but were able to reach agreement on a package of forward-looking decisions, including on extending the NPT indefinitely.

<sup>92</sup> For more on altering the review process, see: Robert Einhorn, "The NPT Review Process: The Need for a More Productive Approach," *Arms Control Today*, September 2016, <https://www.armscontrol.org/taxonomy/term/69>.

<sup>93</sup> NSG Part 1 Guidelines, INFCIRC/254/Rev.13/Part 1, para 4(a).

<sup>94</sup> UN Security Council, Resolution 1887, September 24, 2009, para 18, <http://www.un.org/press/en/2009/sc9746.doc.htm>.

they apply only to exported items and not to material, equipment, or facilities produced indigenously. To address this shortcoming, Pierre Goldschmidt, former IAEA deputy director general for safeguards, recommends that, in addition to their IAEA comprehensive safeguards agreements, NNWSs should also accept “facility-specific” safeguards agreements (i.e., IAEA Information Circular 66 agreements) for any enrichment or reprocessing facilities they possess.<sup>95</sup> Unlike comprehensive safeguards agreements, these facility-specific agreements would remain in force even if a state withdraws from the NPT.

Some NNWSs with fuel cycle facilities will be relatively easy to persuade to accept such backup safeguards arrangements, but others can be expected to resist, arguing that they should not be asked to go “beyond the NPT.” Iran is the most important case. With backup safeguards in place for its enrichment facilities, it would not only have to withdraw from the NPT in order to pursue nuclear weapons (which it could do legally); it would also have to violate its safeguards obligations, which would raise the costs to Tehran of opting for nuclear weapons.

The Trump administration should make broad acceptance of backup safeguards, especially for enrichment and reprocessing facilities, an important element of its approach to reinforcing the NPT.

In addition to preventing a withdrawing state from legally using previously safeguarded facilities to produce nuclear weapons, it is also important to deter NNWSs from covertly violating the NPT in preparation for withdrawal and then claiming to legally exercise their right of withdrawal. This is what North Korea did. In the wake of Pyongyang’s action, NPT parties (and U.N. Security Council resolution 1887) have affirmed the principle under international law that a state is legally responsible for violations committed before withdrawing from an obligation. Thus, the DPRK remains in violation of the NPT, whether or not it is still considered to be a party

(and there are differing views among the parties on whether it should be regarded as having withdrawn).

Discouraging abuse of NPT Article X—whether by cheating and then withdrawing or by withdrawing and using newly unsafeguarded facilities in a weapons program—has received considerable attention at recent Revcons. A working paper submitted to the 2015 Revcon by 39 states, including all five NPT NNWSs, recommended several measures:<sup>96</sup>

- In the event of a notice of withdrawal, the U.N. Security Council should hold consultations to assess the consequences of such withdrawal;
- In the event of a notice of withdrawal, the IAEA Board should meet to assess the withdrawing party’s compliance with its safeguards agreement and to consider appropriate actions (e.g., inspections to verify compliance);
- Parties should conclude arrangements to ensure that any withdrawing state’s materials, equipment, and facilities will remain under safeguards in perpetuity;
- Supplier states should adopt arrangements to ensure that, upon request, a withdrawing state would return or dismantle any equipment or facilities previously supplied; and
- Parties should consider refraining from any further supply of nuclear materials, equipment, or facilities to a withdrawing state.

Such measures, indeed any efforts to discourage abuse of the NPT withdrawal provision, have typically been resisted by members of the NAM, especially South Africa, on the largely ideological grounds that they are designed to infringe on the NNWSs’ right of withdrawal and bind them even more closely to the NPT at a time when the NNWSs are not fulfilling their commitment to nuclear disar-

<sup>95</sup> Pierre Goldschmidt, “Securing Irreversible IAEA Safeguards to Close the Next NPT Loophole,” *Arms Control Today*, March 2015.

<sup>96</sup> “Addressing withdrawal from the Treaty on the Non-Proliferation of Nuclear Weapons,” May 1, 2015, NPT/CONE2015/WP.47/.

mament. In any event, with the 2015 Revcon failing to reach a consensus on a final document, these recommendations went nowhere.

As a matter of policy, the United States can be expected to oppose any future decision to withdraw from the NPT. But as a matter of longstanding legal principle, the United States defends the sovereign right of states to withdraw from treaties, and it will not challenge a state's right to leave the treaty. What it will challenge is a state's abuse of the NPT's withdrawal provision—its participation in the treaty in order to acquire the expertise, materials, and infrastructure to produce nuclear weapons. The Trump administration should take up the effort to build support for measures that would prevent such abuse—and that would thereby create another barrier to a state's decision to opt for nuclear weapons.

## CHAPTER 9

# CONCLUSIONS

The nuclear non-proliferation regime has served U.S. security interests and the security interests of the international community very well. It has reduced the likelihood of nuclear war, avoided the introduction of a destabilizing nuclear dimension into regional tensions and conflicts, bounded U.S. military requirements for defending U.S. security partners and the American homeland, restricted the opportunities for terrorists to get their hands on the materials necessary for nuclear weapons, and provided a reassuring framework for pursuing the peaceful uses of nuclear energy while minimizing the risks of diversion to a nuclear weapons program.

The regime has been successful for a variety of reasons. It was formed during a relatively stable bipolar nuclear world order. Nuclear technology and know-how and the ability to manufacture proliferation-sensitive equipment were concentrated in the hands of a small number of advanced industrialized countries. Most countries did not face a severe security threat that might have motivated them to seek their own nuclear weapons, and many that faced such threats could forgo nuclear weapons by relying on security assurances from friendly nuclear powers. Terrorism existed, but terrorists could not have imagined carrying out mass casualty attacks with nuclear weapons. Now these conditions are changing, and we cannot assume that the regime's success will continue indefinitely.

The United States has been the unrivaled leader of the nuclear non-proliferation regime. Practically every significant advance in the regime has come by way of a U.S. initiative. But with the diffusion of power in the international system—and the decline

of U.S. clout in the worldwide nuclear industry that often enabled the United States to determine the conditions under which nuclear commerce would take place—the United States today has less leverage than it once had to influence developments in the non-proliferation field.

Nevertheless, U.S. leadership remains indispensable—whether in pressuring North Korea to curb its nuclear and missile programs, blocking Iran's path to nuclear weapons, reinforcing the security assurances that allow U.S. partners to forgo their own nuclear deterrent, strengthening the capacity of countries throughout the world to implement effective controls, or addressing the other nuclear non-proliferation challenges addressed here.

Often U.S. leadership will involve mobilizing broad international support, such as persuading IAEA members to boost the agency's budget, encouraging NPT parties to adopt measures to deter abuse of the NPT's withdrawal provision, or ensuring that momentum from the Nuclear Security Summit process is not lost. At other times, U.S. leadership will involve using the weight of Washington's bilateral relationships to advance non-proliferation goals, whether in gaining the ad hoc cooperation of interdiction partners, urging Japan not to resume reprocessing at Rokkasho until there is a path to utilize the plutonium produced, or reassuring the Saudis that the United States remains a reliable security partner.

Bilateral engagement with China and Russia will be critical. Support from those two countries will be required to resolve most proliferation-related issues;

their opposition will make things difficult or even impossible. Relations with China in the period ahead will be competitive in significant respects. Nonetheless, as it pursues its overall agenda with Beijing, the Trump administration should take into account the importance of preserving the potential for cooperation in key non-proliferation areas, including constraining North Korea's nuclear and missile programs and promoting stronger enforcement of China's export controls. Similarly, although the United States and Russia are likely to have sharp differences on Ukraine and other issues, they will need to find a way to work together on Iran and nuclear security as well as other issues. The improved bilateral relationship that U.S. and Russian leaders have called for could facilitate such cooperation

Preventing nuclear proliferation and nuclear terrorism may be more challenging in the years ahead than it has been for the past quarter century. But if the Trump administration gives non-proliferation the top priority it deserves in conducting its foreign and national security policies and exerts the leadership internationally that only the United States can provide, there is a good likelihood that the success that the global nuclear non-proliferation regime has enjoyed can be sustained well into the future.



## ABOUT THE AUTHOR

Robert Einhorn is a senior fellow with the Arms Control and Non-Proliferation Initiative and the Center for 21st Century Security and Intelligence, both housed within the Foreign Policy program at Brookings. During his career at the U.S. Department of State, Einhorn served as assistant secretary for nonproliferation during the Clinton administration and as the secretary of state's special advisor for nonproliferation and arms control during the Obama administration. At Brookings, Einhorn concentrates on arms control, nonproliferation and regional security issues (including Iran, the greater Middle East, South Asia, and Northeast Asia), and U.S. nuclear weapons policies.

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