

A large, bright yellow and orange nuclear mushroom cloud rises from the ground against a dark, reddish-brown sky. The cloud has a thick, billowing stem and a large, rounded, multi-lobed top. In the background, there are faint silhouettes of industrial structures or buildings. At the top of the image, there is a decorative horizontal band with a repeating geometric pattern in a light blue-grey color.

Michael Eisenstadt

IRAN'S NUCLEAR HEDGING STRATEGY

Shaping the Islamic Republic's Proliferation Calculus

Iran's Nuclear Hedging Strategy

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Michael Eisenstadt

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Cover image: Fireball created July 5, 1957, by the “Plumbbob Hood” nuclear weapons test, the largest atmospheric test ever conducted in the continental United States (yield: 74 kilotons); superimposed over photo of Iranian missiles launched during a military exercise.

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Glossary

Given the extensive use of nuclear terms of art throughout this text—some novel, others employed in unconventional ways—the glossary has been placed at the front of this monograph. This will enable readers to become familiar with these terms before proceeding further. Terms are not listed alphabetically, but in order of appearance, or with related concepts.

General

Nuclear proliferation. The spread of nuclear know-how, materials, technology, or weapons to non-nuclear weapons states. It can refer to the process whereby a non-nuclear weapons state acquires weapons, or helps others to do so.

Iran’s Nuclear Options: Buildup, Breakout, or Bomb

Buildup (i.e., fissile material *buildup*). As used in this monograph, the accumulation of a bomb’s worth or more of high-enriched uranium (20% enriched and higher) or weapons-grade fissile material in order to create a “latent nuclear deterrent.”

Breakout (i.e., nuclear *breakout*). The production of sufficient weapons-grade fissile material (i.e., 93% enriched uranium) by a non-nuclear weapons state party to the NPT to enable it to “break out” of its treaty obligations by building a bomb. “Breakout time” refers to how long it would take to produce enough weapons-grade fissile material for one device—traditionally the most difficult step in building a bomb—in an overt breakout scenario (see below) using declared enrichment capabilities. The fissile material would then need to be weaponized, which would take additional time.

There are *sneak-out*, *creep-out*, and *overt breakout* options:

Sneak-out involves the production of weapons-grade fissile material at an undeclared and unsafeguarded nuclear facility. This was the strategy adopted by Iran between 1999 and 2003, and perhaps as late as 2009.

It may involve a clandestine breakout from the NPT without a formal withdrawal from the treaty. Libya, Iraq, North Korea, Syria, and Iran all attempted to sneak-out and were caught before succeeding. Iran may try again, while North Korea has since conducted an overt breakout.

Creep-out entails a slow-motion breakout characterized by the incremental increase of fissile material production at safeguarded facilities to create an option for an overt breakout, or a sneak-out by diverting fissile material to a clandestine site for reprocessing, further enrichment, and/or weaponization.

Overt breakout may involve (1) the use of declared facilities to produce sufficient weapons-grade fissile material for a bomb and its subsequent weaponization elsewhere, in violation of a state party’s NPT obligations; or (2) withdrawal from the NPT as a prelude to manufacture of the bomb. Because this is done overtly, it entails a high degree of risk. North Korea is the only NPT member state to have gone this route, though Iran has also threatened on several occasions to withdraw from the NPT.

This monograph employs a more expansive definition of “nuclear breakout” than is traditionally used in the proliferation literature. It applies this definition to ambiguous activities—such as the diversion of high-enriched or weapons-grade uranium to unsafeguarded sites—that are leading indicators of likely intent to proliferate. The traditional definition, by contrast, generally focuses on activities related to the manufacture of a bomb—lagging indicators of intent to proliferate that may preclude timely warning and an effective response. Redefining “breakout” this way is necessary so that a country like Iran that has repeatedly violated its safeguards agreements and NPT obligations cannot exploit ambiguity in order to advance its nuclear ambitions.

Bomb (i.e., nuclear weapon). A nuclear explosive device that has been miniaturized and hardened to withstand vibration, g-forces, and heat so that it can be delivered by aircraft, missiles, or other means. It depends on a nuclear reaction (fission or fusion) to produce destructive blast, heat, radiation, and electromagnetic effects. The

term *bomb* may be used to refer to nuclear weapons of all types (e.g., aerial bombs, missile warheads, artillery rounds, torpedoes, and mines).

Latency, Hedging, and Nuclear Threshold Status

Nuclear latency. The capability to develop nuclear weapons, whether or not intent is present. Nuclear hedging equals nuclear latency plus intent.

Nuclear hedging. A strategy of pursuing, maintaining, or appearing to maintain a viable option for the production of nuclear weapons using domestic capabilities.

Nuclear threshold state. A state with the ability to conduct a nuclear breakout and produce nuclear weapons using domestic capabilities. States with mature nuclear programs that are engaged in hedging have generally achieved some sort of threshold status—though proximity to the “threshold” may vary greatly. Thus, threshold status covers a spectrum: from *nascent* to *advanced* nuclear threshold states, to *borderline nuclear weapons states*. By this definition, Iran has been a threshold state for over a decade, and is now an advanced nuclear threshold state. If it were to master the steps required to build the bomb, it would be a borderline nuclear weapons state.

Borderline nuclear weapons state. A threshold state possessing a bomb’s worth or more of high-enriched

or weapons-grade fissile material and the know-how, skills, and infrastructure needed to rapidly manufacture a nuclear weapon—perhaps in a matter of weeks.

Nuclear reversal. When a state actively pursuing nuclear weapons halts or reverses aspects of its effort to acquire the bomb and settles for a hedging strategy—at least temporarily.

Nuclear rollback. When a nuclear aspirant abandons its ambitions, or a nuclear weapons state disarms.

Latent, Non-Weaponized, and Weaponized Nuclear Deterrence

Latent (nuclear) deterrence. A form of “nuclear deterrence without the bomb” pursued by a threshold state through the stockpiling of fissile material, which plays on the concerns of adversaries that it might respond to perceived threats by building a nuclear weapon.

Non-weaponized (nuclear) deterrence. The maintenance of nuclear weapons in an unassembled state to prevent inadvertent use, reduce tensions, and bolster strategic stability. Weapons components (fissile-material cores and weapons assemblies) are maintained separately, and can be assembled and then mated with the appropriate delivery system within hours or days. Some scholars claim that because of ambiguities in Article II of the NPT, the manufacture of nuclear

Abbreviations

E3	Britain, France, and Germany
E3/EU+3	Britain, France, Germany, European Union, China, Russia, and United States
IAEA	International Atomic Energy Agency
IRGC	Islamic Revolutionary Guard Corps
JCPOA	Joint Comprehensive Plan of Action
JPOA	Joint Plan of Action
NPT	Nuclear Nonproliferation Treaty
SLBM	submarine-launched ballistic missile
UNSCR	United Nations Security Council resolution
WMD	weapons of mass destruction

weapons components per se would not violate an NPT member state's treaty obligations. Thus, Section T of Annex 1 of the JCPOA explicitly proscribed certain activities that could contribute to the development of a nuclear explosive device. It is not clear, however, whether the IAEA and JCPOA member states have the ability to verify Iran's compliance with these provisions of the JCPOA.

Weaponized (nuclear) deterrence. Deterrence is typically practiced by nuclear weapons states involving an implied or explicit threat to use nuclear weapons.

Strategy and Policy

Shaping. A strategic approach that entails the often subtle use of all instruments of national power (diplomatic, informational, military, economic, and cyber) to

influence an adversary's choices by: altering its assessment of risks, costs, and benefits; changing its geopolitical environment (domestic, regional, and global); and using suasion and coercion to convince the adversary that Washington's desired policy outcome is also in its own best interests. Shaping strategies thus rely on both direct and indirect methods to produce a more sustainable outcome than can be achieved by strategies relying mainly on coercion, because they entail a degree of adversary buy-in. The shaping strategy proposed in this monograph involves convincing Tehran that the pursuit of a buildup, breakout, or bomb would jeopardize other important Iranian policy objectives, and would entail potentially prohibitive risks and costs for indeterminate benefits. A term drawn originally from U.S. military doctrine, it has been redefined here to serve the needs of civilian statecraft.

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Executive Summary

As these words are being written, Iran is rapidly building up a stockpile of high-enriched uranium—the culmination of a decades-long effort to become an advanced nuclear threshold state with a nuclear weapons option. In the months and years to come, efforts to dissuade and deter Tehran from pursuing a fissile material *buildup*, a nuclear *breakout*, or a *bomb* will be central to U.S. policy, whether or not Washington succeeds in reviving the multilateral 2015 nuclear deal with Iran (the Joint Comprehensive Plan of Action, or JCPOA).

While diplomacy, economic sanctions, and offers of sanctions relief will remain fundamental to these efforts, the United States will need to use all elements of national power—diplomatic, informational, military, economic, and cyber—to shape Tehran’s proliferation calculus and dissuade it from engaging in activities that could lead to a latent nuclear deterrent or the means to build a bomb.

Between 1999 and 2003, Iran had a clandestine crash program to manufacture nuclear weapons. Public exposure of the program in August 2002 and fear of an attack following the March 2003 U.S. invasion of Iraq led Tehran to conclude that the potential risks and costs of active proliferation (i.e., building a bomb) were greater than previously anticipated. Accordingly, it largely halted weapons work in October 2003 while continuing with low-signature weapons-related activities, as well as overt and clandestine enrichment efforts. After these clandestine efforts were revealed in 2009, Iran adopted a hedging strategy that has enabled it to continue developing many of the capabilities needed for a nuclear weapons program, while managing the risk of doing so.

This hedging strategy has produced a cautious, go-slow approach that on several occasions has led Iran to temporarily halt or reverse elements of its nuclear program in order to achieve other important objectives (avoiding diplomatic censure, obtaining sanctions relief, gaining recognition of its “right to enrich”). At the same time, Iran worked to advance other parts of its nuclear program while accelerating its missile and drone programs, building up its naval forces, and

bolstering proxies and partners in the region. Iran’s hedging strategy, by creating a latent deterrent capability, may confer many of the benefits of a nuclear arsenal without the risks and costs of active proliferation.

This ambiguous and perhaps ambivalent strategy, however, may create opportunities for U.S.-led efforts to shape the Islamic Republic’s proliferation choices by playing on Tehran’s concerns about the risks and costs of proliferating, while fostering doubts about the utility of nuclear weapons. In this way, the United States may further delay Iran’s nuclear program—buying time to develop additional sources of leverage and to shape the regional environment in ways that may help persuade the Islamic Republic to curb its nuclear ambitions.

Conventional wisdom says that Tehran does not yield to pressure—it yields only to severe pressure. But by relying mainly on economic sanctions to coerce Iran, the United States has become overly dependent on only one of the tools in its policy kit—while Tehran’s efforts to build a self-reliant “resistance economy” and the changing geopolitics of oil and gas could limit the efficacy of economic sanctions as a source of leverage.

Some critics claim, moreover, that only a credible threat of force can stop Iran from getting the bomb. This approach is often based on an implicit assumption that Iran is single-mindedly fixated on nuclear weapons. The result is a policy approach narrowly focused on disruption and deterrence. Yet while the credible threat of force is essential to an effective shaping strategy, it may not be sufficient, as military threats are but one of several factors that likely shape Tehran’s proliferation calculus. Furthermore, a preventive military strike may not always be possible: intelligence sources may dry up; hardening, burying, and dispersal may eventually put Iran’s nuclear program beyond reach; and crises elsewhere in the world may preclude effective U.S. military action.

A strategy to shape Iran’s proliferation calculus is more likely to succeed, then, if it takes a broad-based, holistic approach to the problem. It should rely on sustainable forms of pressure and seek to influence as many of the factors making up Iran’s proliferation calculus as possible. Such a strategy should not rely exclusively on coercion; it should subtly seek to persuade

Iran's Nuclear Hedging Strategy

Iranian decisionmakers that their nuclear weapons ambitions will jeopardize other vital objectives, and that proliferation restraint is therefore in the Islamic Republic's long-term interest.

A shaping strategy will be necessary whether or not the United States and Iran return to mutual compliance with the JCPOA, and it should play on or foster concerns among Iranian decisionmakers about:

- Iran becoming an isolated pariah state—preventing it from reshaping the international system in accordance with its interests
- The destabilizing potential of harsh sanctions—especially if combined with efforts to foment unrest in the Islamic Republic through a campaign of sabotage and subversion
- America's unpredictability and the possibility it will ultimately prove willing to use force to thwart Iran's nuclear ambitions
- The destruction that would be inflicted by an Israeli or U.S. preventive strike against Iran's nuclear program, which could morph into a broader campaign against military, economic, and leadership targets
- The vulnerability of nuclear weapons to sabotage and cyberattacks, turning a nascent nuclear arsenal into a double-edged sword that could be used against Iran
- The destabilizing impact of the deployment of both conventional- and nuclear-armed missiles, which could undermine the utility of Iran's conventional missile force and increase the potential for miscalculation in a crisis or war
- Iran's acute vulnerability to even a limited nuclear strike due to the political, economic, and military centrality of Tehran, resulting in an unprecedented national disaster
- The limited military utility of nuclear weapons for regime protection and power projection
- The potential for a regional nuclear cascade that could pose an existential threat to Iran

Some shaping activities—such as influence operations to heighten Tehran's concerns about the risks, costs, and uncertain benefits of nuclear weapons—should be persistent and ongoing. Others should lay the foundation for actions—diplomatic isolation, the enforcement of harsh sanctions, a campaign of sabotage and subversion, and, as a last resort, military action—that would be implemented only if Iran crossed U.S. red lines.

The overarching goal should be to dissuade or deter Iran from pursuing a nuclear buildup, breakout, or bomb. To this end, Washington should seek broad agreement with allies and partners regarding nuclear red lines whose crossing would prompt unprecedented pressure on Iran (including the possibility of military action) in order to prevent the:

- Stockpiling of high-enriched uranium (a red line that has already been crossed) or the production of weapons-grade fissile material—providing a latent nuclear deterrent
- Diversion of high-enriched or weapons-grade uranium to unsafeguarded hide sites or clandestine enrichment or weaponization facilities—providing a “bombproof” breakout capability
- Research, development, or production of nuclear weapons components and their assembly into a bomb—providing a weaponized nuclear deterrent

These red lines should be quietly conveyed to Tehran, though a successful shaping strategy would hopefully obviate the need to enforce them. Washington, however, faces a dilemma. Iran is already producing high-enriched uranium, leaving the United States or its allies with precious little time to respond should the Islamic Republic move quickly to enrich to weapons grade.

Washington, then, should pressure Tehran to halt—and, if possible, reverse—its ongoing buildup of high-enriched uranium, using all means available short of military force, while making clear that the United States will use military force to prevent the production of weapons-grade fissile material.

Although the Islamic Republic's long-running nuclear program has yet to yield a weapon, it may be nearing an inflection point. In preparing for his succession, Supreme Leader Ayatollah Ali Khamenei has promoted a new generation of ideological hardliners who will determine Iran's future policy, and whose commitment to hedging is uncertain.

Washington should therefore be prepared for the possibility that Tehran may rethink its hedging strategy and revert to active proliferation. Iran might attempt a slow-motion breakout in plain sight (if it is not doing so already) or resume the clandestine pursuit of nuclear weapons. Or, more likely, it may climb to the next rung of the proliferation ladder—moving incrementally to produce weapons-grade uranium or resume secret weapons work. This only underscores the urgent need for a shaping strategy to influence the Islamic Republic's proliferation calculus and “keep the hedger hedging,” lest inaction contribute to the very outcome that the United States has been working for decades to avoid.

Introduction

As these words are being written, Iran is rapidly building up a stockpile of high-enriched uranium—the culmination of a decades-long effort to become an advanced nuclear threshold state with a nuclear weapons option. In the months and years to come, efforts to dissuade and deter Tehran from pursuing a fissile material buildup, a nuclear breakout, or a bomb will be central to U.S. policy toward the Islamic Republic. This will be so whether or not Washington succeeds in reviving the 2015 nuclear deal—formally known as the Joint Comprehensive Plan of Action (JCPOA)—between the Islamic Republic and the United States, Britain, France, Germany, Russia, China, and the European Union. (For an explanation of terms used in this book, see the Glossary.)

While diplomacy, economic sanctions, and offers of sanctions relief will remain fundamental to these efforts, the United States along with its allies and partners will need to use all elements of national power—diplomatic, informational, military, economic, and cyber—to shape Tehran’s proliferation calculus and dissuade it from engaging in activities that could provide it with a latent nuclear deterrent or the means to build a bomb (see figure 1).

Between 1999 and 2003, Iran had a clandestine crash program to manufacture nuclear weapons. Public exposure of the program in August 2002 and the fear of attack following the March 2003 U.S. invasion of Iraq led Tehran to largely halt weapons work in October 2003 and the months that followed, while continuing with low-signature weapons-related activities, as well as overt and clandestine enrichment efforts. After the latter were discovered in 2009, Iran adopted a hedging strategy that has enabled it to make incremental progress toward developing many of the capabilities needed for a nuclear weapons program, while managing the risk of doing so.¹

This hedging strategy has taken the form of a cautious, go-slow approach that on several occasions has led Iran to temporarily halt or reverse elements of its nuclear program, in order to achieve other important objectives (avoiding diplomatic censure, obtaining sanctions relief, and gaining recognition of its “right

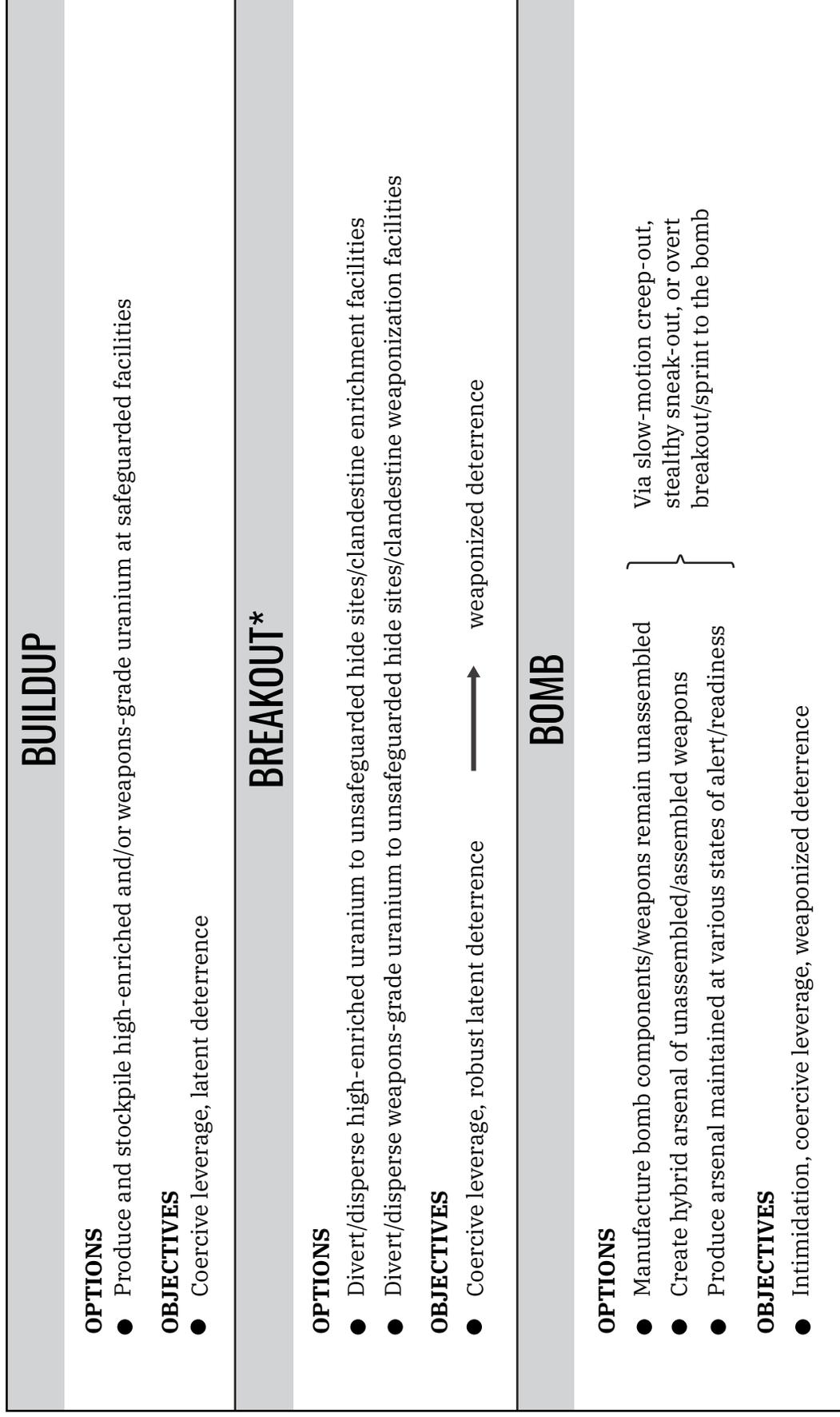
to enrich”). At the same time, Iran worked to advance other parts of its nuclear program as well as the central pillars of its national security strategy—accelerating its missile and drone programs, building up its naval forces, and bolstering proxies and partners in Lebanon, Syria, Iraq, Yemen, and the Palestinian territories.

Thanks in part to this hedging strategy, Iran may have the world’s longest-running nuclear weapons program yet to produce a bomb (see figure 2)—although several other factors led to delays which contributed to this outcome: personnel shortfalls, research and development bottlenecks, project management and systems-integration challenges, constraints created by foreign sanctions and export controls, and foreign sabotage. Iran is likewise the only country in the world producing high-enriched uranium that does not possess nuclear weapons.² Yet Iran’s hedging strategy, by creating a latent deterrent capability, may confer many of the benefits of a nuclear arsenal without the risks and costs of active proliferation (i.e., building a bomb).

This ambiguous and perhaps ambivalent strategy, however, may create opportunities for U.S.-led efforts to shape the Islamic Republic’s proliferation choices by playing on Tehran’s concerns about the risks and costs of proliferating, while fostering doubts about the utility of nuclear weapons. In this way, the United States may further delay Iran’s nuclear program—buying time to develop additional sources of leverage and to shape the regional environment in ways that may help persuade the Islamic Republic to further curb its nuclear ambitions.

Conventional wisdom says that Tehran does not yield to pressure—it yields only to severe pressure.³ But by relying mainly on economic sanctions to coerce Iran, the United States has become overly dependent on only one of the tools in its policy kit, albeit a particularly potent one. However, Tehran’s efforts to build a self-reliant “resistance economy” and the changing geopolitics of oil and gas—which may ensure continued demand for Iran’s energy resources for years to come—could ultimately limit the efficacy of economic sanctions as a source of leverage.

IRAN'S NUCLEAR OPTIONS



*Note: This monograph employs a more expansive definition of “nuclear breakout” than is traditionally used in the proliferation literature. It applies this definition to ambiguous activities—such as the diversion of high-enriched or weapons-grade uranium to unsafeguarded sites—that are leading indicators of likely intent to proliferate. The traditional definition, by contrast, generally focuses on activities related to the manufacture of a bomb—lagging indicators of intent to proliferate that may preclude timely warning and an effective response. Redefining “breakout” this way is necessary so that a country like Iran that has repeatedly violated its safeguards agreements and NPT obligations cannot exploit ambiguity in order to advance its nuclear ambitions.

Figure 1. Iran’s Nuclear Options

Introduction

Some critics claim, moreover, that only a credible threat of force can stop Iran from getting the bomb. This approach is often based on an implicit assumption that Iran is single-mindedly fixated on nuclear weapons. The result is a policy approach narrowly focused on disruption and deterrence. As will be shown below, however, while the credible threat of force is essential to an effective shaping strategy, it may not be sufficient, as military threats are one of several factors that likely shape Tehran's proliferation calculus. Furthermore, a preventive military strike may not always be possible: intelligence sources may dry up; hardening, burying, and dispersal may eventually put Iran's nuclear program beyond reach; and crises elsewhere in the world may preclude effective U.S. military action.

A strategy to shape Iran's proliferation calculus is more likely to succeed, then, if it takes a broad-based, holistic approach to the problem. It should rely on sustainable forms of pressure, and seek to influence as many of the factors that are part of Iran's proliferation calculus as possible. Such a strategy should not rely exclusively on coercion; it should subtly seek to persuade Iranian decisionmakers that their nuclear weapons ambitions will jeopardize other vital objectives, and that proliferation restraint is therefore in the Islamic Republic's long-term interest. For while creating a nuclear option is an important policy objective for the Islamic Republic, it is only one of several that it may be pursuing at any given time.

Such a shaping strategy will be necessary whether or not the United States and Iran return to mutual compliance with the JCPOA. While a return to the JCPOA would temporarily constrain Iran's ability to pursue a buildup, breakout, or bomb, the JCPOA does not solve the challenge posed by Iran's nuclear ambitions. At best, it "kicks the can down the road" and defers a crisis until: (1) the deal's most important limits are lifted, allowing Iran to dramatically increase enrichment capacity after 2028 and produce unlimited quantities of high-enriched or weapons-grade uranium after 2031;⁴ (2) the United States once again withdraws from the agreement; or (3) Iran violates the deal, diverts fissile material from safeguarded facilities, or attempts to break out of the Nuclear Nonproliferation Treaty (NPT) by building a bomb.

Thus, if efforts to revive the JCPOA succeed, this strategy will be key to shaping Iran's options as the deal's main limits sunset. If efforts to revive the deal fail, this shaping strategy will be, by default, the American Plan B, and may be the only way to constrain Iran's nuclear ambitions during a period of heightened tension. And with Supreme Leader Ayatollah Ali Khamenei preparing for his succession by promoting a new generation of ideological hardliners who may eventually end Iran's hedging policy and return to active proliferation, crafting a viable shaping strategy has become a matter of the utmost urgency.

Notes

1. For the central role of risk management in the Islamic Republic's strategic culture, see Michael Eisenstadt, *The Strategic Culture of the Islamic Republic of Iran: Religion, Expediency, and Soft Power in an Era of Disruptive Change*, Middle East Studies Monograph 7 (Marine Corps University, November 2015), 4–5, 15–16, 27–30, available at <https://www.washingtoninstitute.org/policy-analysis/strategic-culture-islamic-republic-iran-religion-expediency-and-soft-power-era>; Michael Eisenstadt, *Deterring Iran in the Gray Zone: Insights from Four Decades of Conflict*, Policy Note 103 (Washington DC: Washington Institute, 2021), 3–6, 12, <https://www.washingtoninstitute.org/policy-analysis/deterring-America-gray-zone-insights-four-decades-conflict>.
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Iran in Context: Nuclear Hedging, Reversal, and Rollback

Hedging is a strategy of maintaining or appearing to maintain a credible option for producing nuclear weapons using domestic capabilities.¹ It applies to countries with nascent nuclear programs that are years from the bomb, as well as advanced nuclear threshold states with mature, well-established programs that could build a bomb within months after deciding to do so. Some states pursue a hedging strategy to explore their nuclear options without necessarily intending to proliferate; others do so, *inter alia*, to build leverage and obtain concessions; and yet others pursue this route to stealthily create a nuclear weapons option—if not a bomb.²

A Host of Hedgers

Since World War II, about thirty countries have achieved a degree of nuclear latency, building nuclear facilities that provided the potential for a nuclear weapons program. Ten of these went on to acquire nuclear weapons; nearly all of the remainder have engaged in some form of nuclear hedging—conducting research and development or building infrastructure indicative of possible intent to manufacture nuclear weapons.³

Thus, Sweden (starting in the early 1950s), Switzerland (in the late 1950s), and Taiwan (in the late 1960s) developed the means to produce fissile material but shut down their programs long before they yielded a device or a weapon.⁴ In the 1960s, Argentina and Brazil developed the means to produce fissile material—with Brazil also toying with the idea of building a nuclear explosive device—before abandoning their weapons programs.⁵ And South Korea pursued nuclear weapons briefly in the 1970s but shelved the effort under U.S. pressure. Its 2021 test of a submarine-launched ballistic missile, making it the world’s only country with a conventionally armed SLBM, may portend a new form of hedging.⁶

Japan has pursued a hedging strategy since the 1950s. It has a robust nuclear industry and is the only country in the world that can both enrich uranium and reprocess plutonium but that does not have nuclear weapons.⁷ This provides Japan with a rapid breakout capability, and what at least one former Japanese

official has referred to as a “tacit nuclear deterrent.”⁸ Thus, Japan could probably produce nuclear weapons within a year if it faced threats from Russia, China, or North Korea and abandonment by the United States.⁹ Japan also produces advanced satellite launch vehicles that could help jump-start the production of missile delivery systems for nuclear weapons.¹⁰

In the Middle East, several countries have pursued nuclear hedging strategies, including Iraq (starting in the 1970s), Libya (starting in the 1980s), and Syria (starting in the 2000s). After an Israeli airstrike destroyed its main nuclear facility in 1981, Iraq initiated a sprawling, clandestine weapons program—launching a crash effort to acquire the bomb on the eve of the 1991 Gulf War. The 1991 and 2003 U.S.-led wars against Iraq and subsequent weapons inspections ended that program. Syria’s nuclear program was likewise halted by an Israeli airstrike in 2007.¹¹

Libya abandoned its nuclear weapons program after 2003, as part of a deal with Britain and the United States. Both Egypt (in the 1960s) and Libya (in the 1970s) had also tried to buy nuclear weapons. Egypt created a rudimentary nuclear infrastructure, but never made sufficient progress to be considered a serious hedger.¹² The United Arab Emirates and Saudi Arabia have also invested in nuclear technology as they look toward a non-oil future and adopt nascent nuclear hedging strategies in response to Iran’s nuclear activities.¹³ Finally, although Israel may have started its program in the 1950s as part of a nuclear hedging strategy, the 1967 war led it to acquire the bomb and adopt a policy of nuclear opacity.¹⁴

Iran is probably the foremost Middle East hedger. In 1984, Tehran revived the nuclear program started by the shah in the 1970s, pursuing a nascent hedging strategy as it cast a wide net to acquire technology and know-how. In 1999, it launched a crash effort to obtain nuclear weapons. However, after the existence of the program was revealed in 2002 and the United States invaded Iraq in 2003, it ordered a halt to most weapons work (apparently fearing a U.S. attack or invasion if these efforts were discovered), while continuing with overt and clandestine enrichment activities until the

latter were revealed in 2009. Iran subsequently adopted a hedging strategy, which enabled it to further build up its nuclear infrastructure while managing risk and preserving a nuclear weapons option.¹⁵

Iran has agreed on three occasions to temporarily halt (2003) and partially reverse (2013 and 2015) its nuclear program—to fend off threats of military action and sanctions, obtain sanctions relief, and gain recognition of its “right to enrich.” (And in 2021–22, it conducted inconclusive negotiations over a return to the 2015 deal.) Iran thus constitutes perhaps the foremost case of nuclear reversal, whereby a state actively pursuing nuclear weapons reverses direction and settles for a hedging strategy—at least temporarily.¹⁶ Some Iranian policymakers have even held up Japan’s hedging strategy as a model for the Islamic Republic—although others have argued in favor of active proliferation.¹⁷ A hedging approach is particularly compatible with Iran’s strategic culture, which emphasizes ambiguity, patience, and incrementalism as a means of advancing Iran’s vital interests, while avoiding escalation and war.¹⁸

Since the late 1980s, moreover, more than a dozen states have engaged in nuclear rollback—the process whereby a nuclear aspirant abandons its ambitions or a nuclear weapons state disarms.¹⁹ These include Argentina, Belarus, Brazil, Iraq, Kazakhstan, Libya, South Africa, South Korea, Sweden, Switzerland, Taiwan, and Ukraine. Five factors have been identified as critical to rollback decisions (and may play a role in nuclear reversal decisions as well): (1) political change, whether as a result of a change in policy, government, or regime; (2) altered perceptions of the military utility of nuclear weapons; (3) external pressure and inducements such as financial blandishments, and positive or negative security assurances; (4) economic constraints—sometimes brought on by sanctions; and (5) a lack of public commitment to the possession of nuclear weapons, reflecting a degree of ambivalence or a policy of calculated ambiguity.²⁰

Thus, Argentina and Brazil abandoned their nuclear weapons programs after their more or less parallel transition from military to civilian rule. South Africa, which produced six nuclear devices, gave them up with the end of the Cold War and the demise of apartheid. Kazakhstan, and Ukraine gave up the nuclear arsenals they inherited upon the breakup of the Soviet Union in return for security assurances as well as political and economic inducements—though Russia retained operational control of these weapons, and it is unlikely that the successor states could have maintained them.²¹ External pressure and a desire to retain U.S. support also informed decisions by Taiwan and South Korea to abandon their nuclear weapons ambitions.²²

Iraq gave up its nuclear and other weapons of mass destruction (WMD) programs after a U.S.-led invasion ousted the regime of Saddam Hussein and the new

government forswore such capabilities to gain foreign support and goodwill. Libya gave up its nuclear and other WMD programs after deciding they contributed little to its security or development, were an obstacle to ending its international isolation, and jeopardized the regime’s survival after the United States invaded Iraq to rid that country of WMD.²³

Several conclusions can be drawn from this brief survey of the relatively large number of states that have developed latent nuclear capabilities as a prelude to active proliferation, hedging, or reversal/rollback: (1) Crash programs are more the exception than the rule—although about half of those states that eventually acquired nuclear weapons, did so by “crashing and dashing”;²⁴ (2) Most nuclear programs take nonlinear paths, and progress in fits and starts—especially formerly secret programs that have been exposed and that are subject to intense scrutiny and pressure; (3) Nuclear programs are often halted, reversed (even if temporarily), or abandoned because they hinder or jeopardize other important policy objectives; (4) For some policymakers, the goal of hedging is not nuclear weapons per se, but a nuclear option if needed.²⁵ For others, hedging may provide a cover for stealthy, incremental progress toward active proliferation. In Iran, policymakers can be found in both camps.²⁶

From Crashing and Dashing to Hedging and Leveraging—and Beyond

The Islamic Republic’s nuclear program dates to 1984, when at the height of the Iran-Iraq War it started secretly investigating options for producing fissile material and building nuclear weapons.²⁷ By 1999, Iran had made sufficient progress and was sufficiently concerned that Iraq might restart its own nuclear program (damaged in the 1991 Gulf War and largely dismantled by UN inspectors thereafter) that it launched a clandestine crash weapons program. The so-called AMAD Plan was supposed to produce Iran’s first nuclear weapon by late 2002, a total of five nuclear weapons by early 2003, and to be prepared to test one soon thereafter. This proposed timeline proved wildly overoptimistic, however, and the program soon fell behind schedule. Iran also created a capability to produce sufficient fissile material for many more devices.²⁸

In August 2002, an Iranian opposition group revealed that Iran was building clandestine nuclear facilities at Natanz and Arak—sites that had for some time been monitored by U.S. and Israeli intelligence.²⁹ Tehran was shaken by the compromise of these efforts. It tried to portray the facilities under construction—a gas centrifuge enrichment plant at Natanz and a heavy-water plant at Arak (for a heavy-water reactor that would later be built nearby)—as legitimate fuel cycle facilities that were part of a peaceful civilian nuclear program. It

Iran's Nuclear Hedging Strategy: Between Latent and Weaponized Deterrence?

Iran's hedging strategy has enabled it—over the past decade or more—to incrementally boost its enrichment capabilities, increase its stockpiles of enriched uranium, and reduce its breakout time. As a result, it is now an advanced nuclear threshold state. Thus, in 2006, when Iran commenced industrial-scale enrichment, it had only a few hundred gas centrifuges and virtually no stockpiles of enriched uranium. On the eve of the JCPOA in 2015, it had more than 19,000 centrifuges and over 7,000 kg of low-enriched uranium (sufficient for eight to ten bombs), and its breakout time was one to two months.

The JCPOA cut Iran's inventory of centrifuges to about 6,000 and its stockpile of low-enriched uranium to 300 kg, and pushed its breakout time to about a year—although the JCPOA lifts limits on enrichment in 2031.³⁰ In return for Iran forswearing any ambitions to acquire nuclear weapons, the JCPOA effectively legitimized the Islamic Republic's eventual emergence as an advanced nuclear threshold state.

The U.S. withdrawal from the JCPOA in 2018 provided Iran with a pretext for resuming enrichment using more advanced and efficient centrifuges. This hastened the onset of a nuclear crisis for which the United States and Israel were inexplicably unprepared,³¹ and which might otherwise not have occurred for another decade or more, when limits on Iran's enrichment were to end.³² Today Iran operates more than 7,000 centrifuges, has stockpiled enough enriched uranium for perhaps four to six bombs, and is on the verge of enriching weapons-grade uranium, while its breakout time has been cut to no more than a week or two.³³

Iran's breakout time is likely to diminish even further in the coming months. If it continues producing 60% enriched uranium and more efficient advanced centrifuges, the time may come when the Islamic Republic can create enough weapons-grade (93%) uranium for a bomb between International Atomic Energy Agency (IAEA) inspections.³⁴

Indeed, Iran is doing everything one would expect it to do if it were attempting a slow-motion breakout: ramping up production of 60% enriched uranium, limiting access by IAEA inspectors, moving centrifuges to hardened, buried sites, and disabling IAEA cameras monitoring centrifuge production (raising concerns that the centrifuges are being diverted to clandestine enrichment facilities).³⁵

So what are Tehran's nuclear intentions? In the late 1990s and early 2000s, its goal was to obtain nuclear weapons. Since then, however, it has been

hedging—either to become an advanced nuclear threshold/borderline nuclear weapons state with a latent deterrence capability, or to pave the way for its eventual acquisition of nuclear weapons. Iran's retention of the archives related to its weapons program from the late 1990s and early 2000s indicates that it still likely aspires to be a nuclear weapons state.³⁶ Iran may also be stockpiling high-enriched uranium to gain leverage in negotiations to restore the JCPOA, or as a hedge against a Republican victory in the 2024 elections and a return to “maximum pressure.”

In addition to providing latent deterrence, a stockpile of high-enriched or weapons-grade uranium could also enable Iran to climb the next rungs of the proliferation ladder by allowing it to: (1) divert significant quantities of uranium to unsafeguarded hide sites or clandestine enrichment or weaponization facilities during a crisis or conflict to gain additional leverage, bolster deterrence, or facilitate a dash to the bomb; (2) build the components of a bomb without assembling them, to create a “non-weaponized” deterrent that it could claim does not technically violate the NPT;³⁷ or (3) rapidly build an arsenal of nuclear weapons (see figure 1).

Whereas the main challenge for most aspiring proliferators is the production of fissile material, for Iran it is now weaponization. Iran still has knowledge, experience, and skill gaps pertaining to weaponization and would need time to develop, produce, and integrate the components needed for a nuclear explosive device.³⁸ According to U.S. intelligence assessments, assuming the availability of stocks of weapons-grade uranium, Iran might need a few months to manufacture a device for delivery by boat or plane.³⁹ Israeli military intelligence estimates that it would take Iran up to two years to build a weapon for delivery by missile.⁴⁰

In sum, even if Iran does not build a bomb, its possession of stocks of high-enriched uranium and the ability to divert them to hide sites or clandestine enrichment or weaponization facilities during a crisis or war makes it an advanced nuclear threshold state with a potentially “bombproof” breakout option and a latent nuclear deterrent capability.⁴¹ Former president Akbar Hashemi Rafsanjani explained the logic underpinning this hedging strategy to a group of visiting American experts in 2005: “Look, as long as we can enrich uranium and master the [nuclear] fuel cycle, we don't need anything else. Our neighbors will be able to draw the proper conclusions.”⁴²

continued construction of these facilities and in 2006 started enriching uranium at Natanz. Work on the reactor at Arak started in 2004; it was still not completed by the time the JCPOA was concluded in 2015.⁴³ The U.S. invasion of Iraq in 2003 came as an additional shock to Iran's leadership, which feared that the United States would target the Islamic Republic next for regime change.

In late October 2003, Tehran issued an order to halt nuclear weapons work being done secretly at various sites under the AMAD Plan, which largely played out in the months that followed. Presumably, this was done to preclude discovery of these clandestine sites by the IAEA and to avoid providing the United States a reason to attack or invade. It downsized and restructured these efforts; major facilities involved in weapons work were shuttered, although weapons design teams are believed to have been kept together to continue with weapons-related research.⁴⁴

Activities for which there were plausible "legitimate" cover stories were allowed to continue. Activities for which there were no plausible cover stories and which could have produced telltale signatures were apparently halted, while some low-signature weapons-related work apparently continued through 2009—and possibly thereafter.⁴⁵ Not coincidentally, Supreme Leader Khamenei issued his so-called nuclear fatwa in late October 2003, ostensibly banning the research, development, and stockpiling of nuclear weapons, as part of a broader effort to portray Iran's nuclear program as strictly peaceful in intent.⁴⁶

The exposure of Tehran's nuclear enrichment program in 2002, however, greatly complicated the pursuit of nuclear weapons by subjecting its activities to intense scrutiny, intrusive IAEA inspections, diplomatic and economic pressure, sabotage, and threats of military action. This led to further revelations in 2009 regarding the clandestine enrichment facility in Fordow and additional disclosures throughout this period about past and possibly ongoing weapons design work at various sites. Iran may still have entertained hopes of attempting a nuclear "sneak-out"—albeit on an extended timeline—until the existence of its clandestine enrichment site at Fordow was revealed.

Iran gradually adopted a hedging strategy after unsuccessfully trying to deflect foreign pressure following the revelations regarding Natanz (2003) and Fordow (2009) and to preserve the option of a clandestine sneak-out. To this end, it declared its intention to voluntarily and temporarily suspend enrichment and reprocessing activities in 2003 during a visit to Tehran by the foreign ministers of France, Germany, and Britain (the E3). And it agreed to temporarily halt, reverse, and cap major components of its nuclear program in an interim agreement in 2013 (the JPOA) and a long-term

agreement in 2015 (the JCPOA) with the E3/EU+3 (the E3 plus the European Union, Russia, China, and the United States). Meanwhile, it worked to advance other elements of its program.

Thus, following the 2003 Tehran declaration, Iran continued work on a uranium conversion plant at Isfahan and a heavy-water production plant at Arak, while commencing construction on a heavy-water reactor there.⁴⁷ Likewise, the JCPOA allowed Iran to continue work on centrifuges (albeit within prescribed limits).⁴⁸ Throughout this period, Iran also continued work on its missile program—the primary delivery means for nuclear weapons under the AMAD Plan.

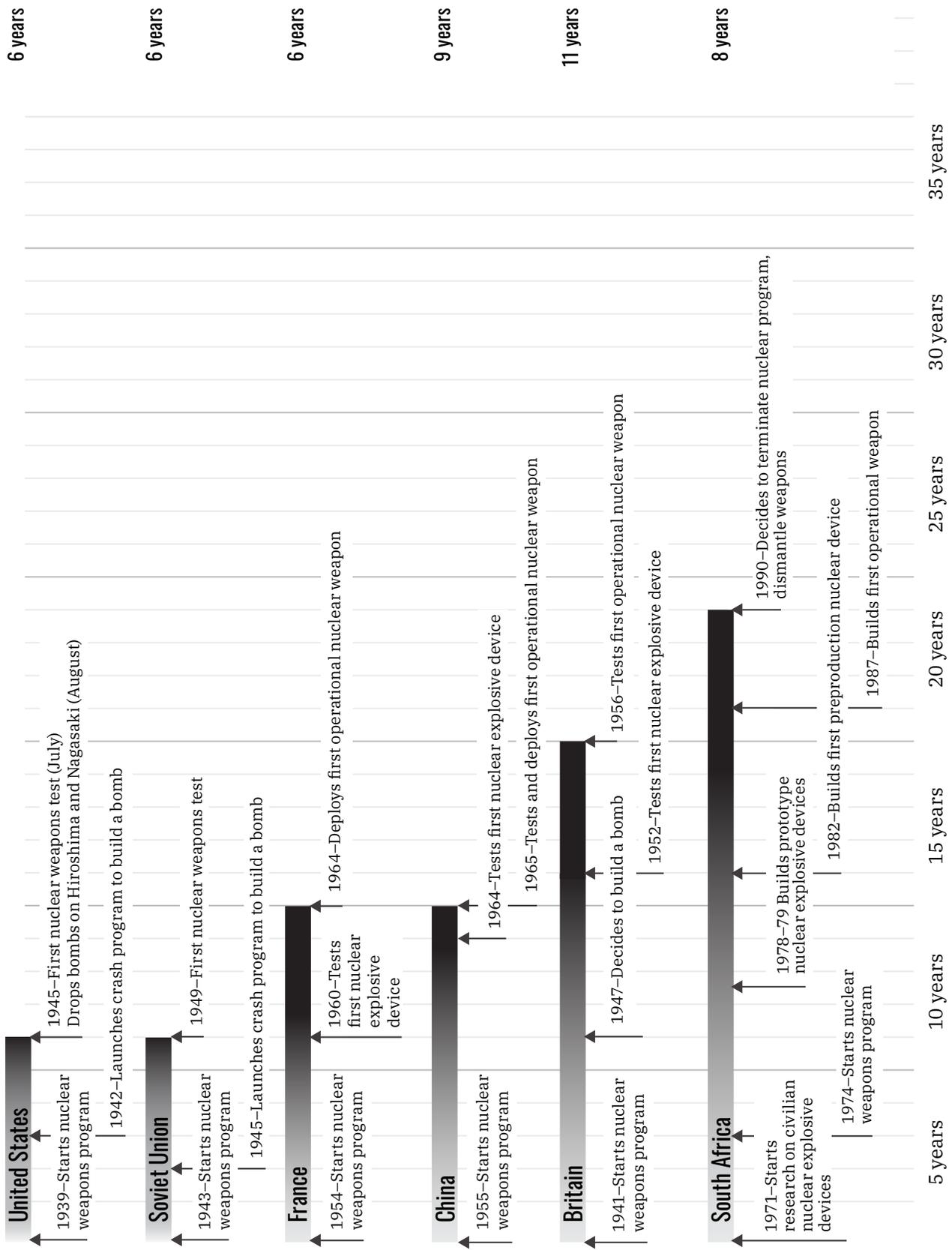
If Iran's crash program to develop nuclear weapons in the late 1990s and early 2000s was its nuclear Plan A, the hedging strategy it eventually adopted in order to manage domestic and foreign pressures was its Plan B. There were a number of proximate causes for Iran's adoption, at least temporarily, of such an approach:

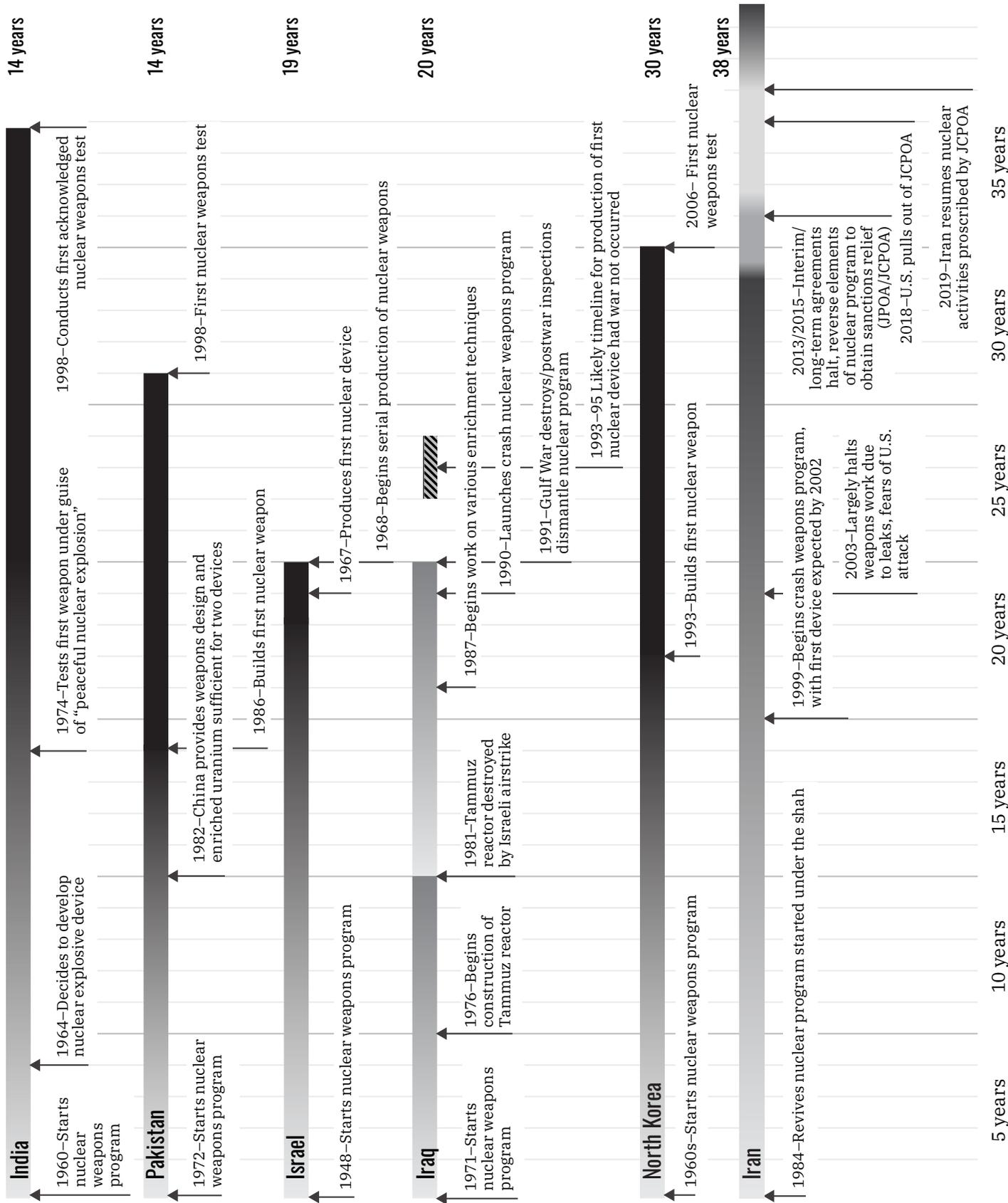
- Tehran likely concluded that a clandestine nuclear breakout was no longer possible due to foreign intelligence penetration and ongoing scrutiny of its nuclear program, and that attempting a breakout after the 2003 U.S. invasion of Iraq would involve great risk—even with American forces mired fighting insurgents in Iraq.⁴⁹
- Tehran needed relief from the crippling economic sanctions of 2010–12, which had the potential to spark political instability—especially with the 2009 Green Movement protests still fresh in the memory of officials who considered them an even greater threat to the survival of the regime than the Iran-Iraq War.⁵⁰
- The 2013 election of Hassan Rouhani as Iran's president empowered "nuclear centrists" who were willing to accept constraints on Iran's nuclear program in return for sanctions relief, an easing of the country's isolation, and the legitimization of its nuclear program. This development energized ongoing nuclear diplomacy, leading to the JCPOA—which formalized Iran's adoption of a hedging strategy.⁵¹

Thus, foreign intelligence penetration, a perceived military threat, and harsh multilateral sanctions led Iran to halt its crash program and eventually adopt a hedging strategy. Subsequent Israeli threats against its nuclear program may have persuaded Tehran to persist with its hedging strategy and convinced the EU and others to impose the multilateral sanctions on Iran that paved the way for the JCPOA—in order to avert a possible Israeli strike.

Additional factors that may have caused Iran to hedge are discussed in the next chapter.

Figure 2. Nuclear Timelines: Iran vs. Other Nuclear Proliferators





1998—Conducts first acknowledged nuclear weapons test

1998—First nuclear weapons test

1998—Begins serial production of nuclear weapons

1993—95 Likely timeline for production of first nuclear device had war not occurred

2013/2015—Interim/long-term agreements halt, reverse elements of nuclear program to obtain sanctions relief (JCPOA/JCPOA)

2018—U.S. pulls out of JCPOA

2019—Iran resumes nuclear activities proscribed by JCPOA

14 years

14 years

19 years

20 years

30 years

38 years

5 years

10 years

15 years

20 years

25 years

30 years

35 years

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 33. Paul K. Kerr, “Iran and Nuclear Weapons Production,” Congressional Research Service Report, *InFocus*, July 25, 2022, 1, <https://crsreports.congress.gov/product/pdf/IF/IF12106>; Kelsey Davenport, “IAEA Reports Signal Escalating Nuclear Crisis with Iran,” Arms Control Association, June 1, 2022, 1, <https://bit.ly/3SLRFPL>; David Albright and Sarah Burkhard, “Iranian Breakout Timeline Now at Zero,” Institute for Science and International Security, June 1, 2022, 1, <https://isis-online.org/isis-reports/detail/iranian-breakout-timeline-now-at-zero>.
 34. Davenport, “IAEA Reports,” 1, <https://bit.ly/3SLRFPL>; Andrea Stricker, “Iran Is in Position for a Surprise Nuclear Breakout,” *The Dispatch*, May 17, 2022, <https://thedispatch.com/p/iran-is-in-position-for-a-surprise>.
 35. Stricker, “Iran Is in Position,” <https://thedispatch.com/p/iran-is-in-position-for-a-surprise>.
 36. For more on the archives smuggled out of Iran by the Mossad, see David Albright et al., *Iran’s Perilous Pursuit of Nuclear Weapons* (Washington DC: Institute for Science and International Security, 2021), 1–15; Aaron Arnold et al., “The Iran Nuclear Archive: Impressions and Implications,” *Intelligence and National Security* 36, no. 2 (2021): 230–42, <https://doi.org/10.1080/02684527.2021.1857086>.
 37. Some legal scholars have argued that an NPT non-nuclear weapons state that has manufactured nuclear weapons components but not assembled them into a bomb has not violated its NPT obligations. David S. Jonas, “Ambiguity Defines the NPT: What Does ‘Manufacture’ Mean?” *Loyola of Los Angeles International Comparative Law Review* 36, no. 2 (2014): 263–80, <https://digitalcommons.lmu.edu/ilr/vol36/iss2/3/>. For more on gaps, loopholes, and areas of ambiguity in the NPT, see Leonard Weiss, “The Nuclear Nonproliferation Treaty: Strengths and Gaps,” in *Fighting Proliferation: New Concerns for the Nineties*, ed. Henry Sokolski (Maxwell Air Force Base, AL: Air University Press, 1996), 31–55.
 38. For instance, one of these gaps concerns the casting and machining of the uranium metal bomb core. Kerr, “Iran and Nuclear Weapons,” 1, <https://crsreports.congress.gov/product/pdf/IF/IF12106>; Yoav Limor, “A TikTok War and Weapons-Grade Enrichment,” interview with the head of the IDF’s Military Intelligence Research and Analysis Division, Brig. Gen. Amit Saar, *Israel Hayom*, April 29,

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39. Kerr, "Iran and Nuclear Weapons," 1, <https://crsreports.congress.gov/product/pdf/IF/IF12106>.
 40. Limor, "A TikTok War," <https://www.israelhayom.com/2022/04/29/a-tiktok-war-and-weapons-grade-enrichment/>; Limor, "It's All About Iran," <https://www.israelhayom.com/2019/09/29/at-the-end-of-the-day-its-all-about-iran/>.
 41. Fuhrmann, "Latent Nuclear Deterrence," <https://bit.ly/3C7Hbms>.
 42. Peter Baker and Dafna Linzer, "Diving Deep, Unearthing a Surprise," *Washington Post*, December 8, 2007, <https://www.washingtonpost.com/wp-dyn/content/article/2007/12/07/AR2007120702418.html>.
 43. Albright, *Peddling Peril*, 185–205.
 44. Albright et al., *Iran's Perilous Pursuit*, 281–309. See also Office of the Director of National Intelligence, "Iran: Nuclear Intentions and Capabilities," November 2007, available at http://graphics8.nytimes.com/packages/pdf/international/20071203_release.pdf.
 45. Although most weapons-related work apparently stopped in the months that followed the halt order in October 2003, Iran is reported to have engaged in computer modeling related to nuclear explosive configurations for an implosion device as well as studies relating to high explosives modeling prior to 2004 and between 2005 and 2009. Iran reportedly also conducted neutron source design work between 2006 and 2010, and in 2010 or 2011 it reportedly received computer software and nuclear weapons data from North Korea that had applications in the design and development of nuclear weapons. Iran's leadership, or at least those individuals overseeing this research, probably believed that these low-signature activities would not be detected by foreign intelligence services or IAEA inspectors. IAEA, "Final Assessment on Past and Present Outstanding Issues Regarding Iran's Nuclear Programme," GOV/2015/68, December 2, 2015, 11–12, <https://www.iaea.org/sites/default/files/gov-2015-68.pdf>; Albright et al., *Iran's Perilous Pursuit*, 281–309, 317, 352–53, 359–82, 387–431, 447–51. See also Joby Warrick, "Iran May Have Continued Weapons Research After 2003, IAEA Chief Says," *Washington Post*, April 8, 2013, https://www.washingtonpost.com/world/national-security/iran-may-have-continued-weapons-research-iaea-chief-says/2013/04/08/0021a9e0-a066-11e2-82bc-511538ae90a4_story.html.
 46. Michael Eisenstadt and Mehdi Khalaji, *Nuclear Fatwa: Religion and Politics in Iran's Proliferation Strategy*, Policy Focus 115 (Washington DC: Washington Institute, 2011), ix, 1, <http://www.washingtoninstitute.org/policy-analysis/view/nuclear-fatwa-religion-and-politics-in-irans-proliferation-strategy>.
 47. "Iranian Pres Candidate Rouhani Sets Record Straight," YouTube, #HassanRouhani, <https://www.youtube.com/watch?v=MyHGPDZvtSM>.
 48. Richard Stone, "Exclusive: Iran's Atomic Czar Explains How He Helped Seal the Iran Nuclear Agreement," *Science*, August 12, 2015, <https://www.science.org/content/article/exclusive-iran-s-atomic-czar-explains-how-he-helped-seal-iran-nuclear-agreement>. See also "Iran's Long-Term Centrifuge Enrichment Plan: Providing Needed Transparency," Institute for Science and International Security, reissued April 25, 2019, <https://isis-online.org/isis-reports/detail/irans-long-term-centrifuge-enrichment-plan-providing-needed-transparency/8>.
 49. Despite its troubles in Iraq, Washington conducted effective coercive diplomacy vis-a-vis Tehran through the latter part of the first decade of the 2000s and early 2010s. Thus, Iran-supported proxies ceased rocket attacks on the U.S. embassy in Baghdad in April 2008 and on U.S. forward-operating bases in Iraq in June 2011 after the United States warned Iran that continued attacks would provoke a harsh U.S. response. And after warning the United States in December 2011 that it would close the Strait of Hormuz in response to new sanctions, Iran backed off when senior U.S. officials hinted that such a move would prompt a military response. Michael Eisenstadt, *Not by Sanctions Alone: Using Military and Other Means to Bolster Nuclear Diplomacy with Iran*, Strategic Report 13 (Washington DC: Washington Institute, 2013), 3–5, <https://www.washingtoninstitute.org/policy-analysis/not-sanctions-alone-using-military-and-other-means-bolster-nuclear-diplomacy-iran>.
 50. Robin Pomeroy, "Iran Protests Bigger Threat Than Iraq War—Guard," Reuters, June 10, 2010, <https://www.reuters.com/article/uk-iran-vote-guards/iran-protests-bigger-threat-than-iraq-war-guard-idUKTRE65931M20100610>.
 51. Narang, *Seeking the Bomb*, 320–35. For more on "nuclear supporters," "nuclear centrists," and "nuclear detractors" in Iran's political system, see Gerami, *Leadership Divided?* 19–30, <https://www.washingtoninstitute.org/policy-analysis/leadership-divided-domestic-politics-irans-nuclear-debate>.

Iran's Proliferation Calculus: Risks, Costs, Benefits

The Islamic Republic initiated its nuclear weapons program at the height of the Iran-Iraq War. Iraq was making widespread use of chemical weapons and Iranian policymakers feared their neighbor was rebuilding its nuclear weapons program, which had been destroyed by an Israeli airstrike in 1981. According to then parliament speaker, acting chief of staff of the Islamic Republic of Iran Armed Forces, and future president Akbar Hashemi Rafsanjani,

When we first began, we were at war and we sought to have that possibility for the day that the enemy might use a nuclear weapon. That was the thinking. But it never became real...Our basic doctrine was always a peaceful nuclear application, but it never left our mind that if one day we should be threatened and it was imperative, we should be able to go down the other path.¹

Yet the reason a country starts a nuclear weapons program may not be the reason it continues down that path. Iran's motivations for continuing the program after the Iran-Iraq War were likely threefold:

- **Deterrence and defense.** The Iran-Iraq War taught Tehran how costly deterrence failures can be. The Islamic Republic sees its nuclear option as an ultimate deterrent against enemies that may threaten its vital interests or survival.
- **Power, prestige, and influence.** Nuclear weapons are a hallmark of great power status, and would make Iran the dominant regional power while confirming its status as a leading Muslim state.
- **Self-reliance.** For a strategically lonely country that does not seek a great power patron and strives to be self-sufficient in all domains, nuclear weapons would advance its policy of self-reliance.

There are no indications that Supreme Leader Khomeini sees nuclear weapons as useful for warfighting—except perhaps in the unlikely event of an invasion by

a great power. Moreover, four decades of experience provides little evidence, at least thus far, that Iran's proliferation calculus has been shaped by millenarian thinking, or that Iran is led by a "messianic apocalyptic cult"² for which mutual assured destruction is "not a constraint" but "an inducement."³ Iranian decision-makers have been motivated by more prosaic considerations to build a bomb or to pursue a nuclear option. That could change, however, with the rise of a new generation of hardline officials and efforts to inculcate a cult of Mahdism (belief in the imminent return of the Hidden Imam) among the nation's youth.⁴

Iran's proliferation calculus, moreover, may have been altered by dramatic shifts in its strategic environment in the past decade. During this period, the Islamic Republic transformed itself (1) from a country fearing encirclement by the United States to a country encircling the latter's foremost regional allies: Israel and Saudi Arabia; (2) from a strategically lonely power to the leader of the region's most cohesive political-military bloc—the so-called axis of resistance; and (3) from a nuclear rogue state to an advanced nuclear threshold state, whose status as such was confirmed and legitimized by the JCPOA.

Nuclear weapons could be used as part of Iran's strategy of encirclement. In this strategy, proxy and Islamic Revolutionary Guard Corps (IRGC) forces equipped with conventional rockets, drones, and missiles can threaten to create a "ring of fire" around Israel and Saudi Arabia and make normal life in these countries intolerable. Iran apparently hopes, at least in the case of Israel, that incessant conflict would cause foreign investment to dry up and induce those Jews with options to leave for elsewhere. Iran also seeks to arm the Palestinians in both Gaza and the West Bank to enable them, in conjunction with Lebanese Hezbollah, to seize and hold Israeli territory in future wars.⁵

If Iran were to obtain the bomb, it could also dangle the threat of nuclear annihilation over the heads of Israelis—playing on Jewish existential fears and historical traumas.⁶ Iran's massive arsenal of conventional precision strike systems, however, including more than three thousand ballistic missiles (some of which can

reach Israel),⁷ may enable it to inflict a degree of disruption, if not destruction, previously thought possible only with nuclear weapons. This conventional option may weaken the incentive to proliferate, at least temporarily, if the risks and costs of doing so are deemed prohibitive.⁸

Iranian policymakers have repeatedly insisted that the Islamic Republic is not interested in acquiring nuclear weapons. These official disclaimers usually invoke ethical and religious objections to nuclear weapons—thereby enabling Iran to stake out the moral high ground.⁹ Some Iranian officials, like former nuclear negotiator Ambassador Seyed Hossein Mousavian, have offered other arguments as well in support of this claim,¹⁰ even though there is abundant evidence that Iran was actively pursuing nuclear weapons, at least through the 2000s, and that it almost certainly continues to harbor nuclear ambitions. The arguments generally include the following points—though they are rarely fleshed out in detail or discussed in depth:

- **Doubts about military utility.** Iran and its proxies have inflicted major setbacks on the United States without nuclear weapons, and possession of such weapons did not prevent the collapse of the Soviet Union or the defeat of the United States in Vietnam, Iraq, and Afghanistan.
- **Avoiding pariah status.** The acquisition of nuclear weapons may consign Iran to the fate of North Korea—an isolated, sanctioned pariah state—and prevent the Islamic Republic from becoming a strong, influential actor that can shape the international system.
- **Averting military action.** An attempt to acquire nuclear weapons could prompt an attack by Israel or the United States and lead to a broader conflict that could wreak havoc on the Islamic Republic.
- **Preventing a proliferation cascade.** An Iranian bomb could prompt a proliferation cascade involving Egypt, Turkey, or Saudi Arabia, further destabilizing the region and threatening Iran.
- **Moral-religious considerations.** A ban in the form of a religious decree, or fatwa, by Supreme Leader Khamenei precludes the development, production, or use of nuclear weapons by Iran.

Some of these arguments have been raised by Iranian analysts in public debates about the Islamic Republic's nuclear program,¹¹ and were likely raised during internal debates that preceded Iran's adoption of a hedging strategy—once it became clear that the potential risks and costs of active proliferation were greater

than previously anticipated.¹² These arguments likely shaped, and continue to influence, Iran's proliferation calculus.

A closer examination of these arguments, however, yields a complex, ambiguous, and somewhat inconsistent picture of Iranian thinking on this matter. This reflects the vagaries of Iranian politics, in which policymakers: must navigate an ever-changing domestic and geopolitical landscape; are subject to various crosscutting domestic and external pressures; and frequently contrive arguments in response to the political needs of the moment or to deceive foreign enemies. The picture that emerges often confounds American analysts and policymakers who tend to seek clarity, order, and consistency in the reasoning and conduct of others—even when such attributes are lacking in their own reasoning and policy preferences.

Doubts About Military Utility

On several occasions, Supreme Leader Khamenei has raised questions about the military utility of nuclear weapons—perhaps to justify *ex post facto* the 2003 decision to halt Iran's crash program, or as a result of a reassessment of the risks and costs of pursuing the bomb. Thus, in 2004, he stated:

If we have defeated our enemies until today, we have not done so with a nuclear bomb. It is 25 years now that the people of Iran have been defeating America. Is it not the case? How has America been defeated throughout the past 25 years? Did we defeat America with a nuclear bomb or with our determination, willpower, awareness and unity?...Did the former Soviet Union not have a nuclear bomb? Probably, the former Soviet Union had more nuclear bombs than America had, but was it not defeated? Victory and defeat on the main scenes of the world are not dependent on such things.¹³

In 2012, Khamenei further expanded on this theme, asserting:

Nuclear weapons neither ensure security, nor do they consolidate political power; rather they are a threat to both security and political power. The events that took place in the 1990s showed that the possession of such weapons could not even safeguard a regime like the former Soviet Union. And today we see certain countries which are exposed to waves of deadly insecurity despite possessing atomic bombs.¹⁴

Conversely, it has been frequently claimed that NATO's support for rebels seeking the overthrow of Libyan dictator Muammar Qadhafi in 2011, years after he abandoned the country's nuclear program, made Tehran more likely to pursue nuclear weapons as an insurance policy.¹⁵

Indeed, as Arab Spring violence escalated in Libya in early 2011, Khamenei famously urged Iranians to

just compare the situation of our nation with the Libyan nation. [T]he entire world, led by America, was protesting against Iran's nuclear program. They imposed sanctions on us. They threatened us with military attacks. They threatened that they would attack our country. Not only did our government officials not retreat, but they also increased our nuclear facilities by several times each year against the wish of the enemy. In Libya the people saw their government officials get rid of all their nuclear facilities in the face of western threats, or what they call "western incentives." Just the way you give a lollipop to a child, westerners gave "incentives" to them and they gave up everything.¹⁶

Here, Khamenei was not necessarily arguing that nuclear weapons would have prevented the overthrow of Qadhafi. Rather, he was suggesting that Libya's abandonment of its nuclear program demonstrated weakness in the face of pressure, contributing to Qadhafi's downfall. This quotation shows how, for Khamenei, Iran's nuclear program is central to the Islamic Republic's policy of "resistance"—and is as much a means of demonstrating resolve and creating diplomatic leverage as it is a potential military asset. Indeed, if the lesson of Libya had been that Iran urgently needed nuclear weapons to counter domestic and external challenges, it would have gone for the bomb, rather than agree to the JPOA in 2013 and the JCPOA in 2015.

Russia's 2022 invasion of Ukraine may provide renewed impetus to the debate about the utility of nuclear weapons. Hardline Iranian analysts and commentators have argued that had Ukraine retained its nuclear weapons, the Russian invasion would never have happened, emphasizing the need for a powerful deterrent in an increasingly Hobbesian world.¹⁷ It remains to be seen whether this will strengthen the hand of those officials who favor the production of nuclear weapons, or whether Iran's conventional missile and drone force will be deemed sufficient for deterrence—at least for now.¹⁸ But it can also be argued that NATO's willingness to pour conventional arms into Ukraine, resulting in a series of humiliating defeats for Russian forces, underscores the limits of nuclear weapons in conventional conflicts, even as Russia's use of nonstrategic nuclear weapons in Ukraine could upend these calculations.

Thus, while Iran's leaders may not see nuclear weapons as the answer to the country's most pressing security challenges, its nuclear program provides the Islamic Republic with leverage over the international community and a hedge against geopolitical uncertainty. Moreover, Iran's nuclear program enables the regime to rally its supporters around an issue that resonates with many

of them because it is seen as touching on the nation's dignity, sovereignty, and place in the world.

Avoiding Pariah Status

The leaders of the Islamic Republic aspire to a regional and global leadership role, but they cannot lead if Iran is isolated and sanctioned. They do not want the Islamic Republic to become a pariah state like North Korea—the so-called hermit kingdom that seems to revel in its isolation. Thus, they have agreed to temporarily halt (in 2003) or to temporarily, partially reverse (in 2013 and 2015) large parts of Iran's nuclear program to avoid this fate. They may do so again, even though senior Iranian officials have often defiantly claimed that they do not respond to pressure.¹⁹

Iran may have adopted a hedging strategy in part to avoid becoming a pariah state. But some hardliners have pointed to North Korea's defiance of the United States as a model to be emulated,²⁰ and they may believe that Iran would not, in fact, turn into another North Korea if it pursued a buildup, breakout, or bomb. They seem to think that due to its strategic location, regional influence, oil and gas reserves, and utility to Russia and China, Iran will remain a relevant and influential country. And they may oppose the lifting of sanctions because they benefit financially from the smuggling and sanctions-busting that is central to Iran's emerging "resistance economy." Should the domestic balance of power continue to favor these hardliners, fear of isolation may play a reduced role in Iran's proliferation calculus.

Averting Military Action

Iranian officials have rarely voiced concern that nuclear arms would put Iran in the crosshairs of its enemies—perhaps because they feel a need to project confidence and strength. But Iran's behavior demonstrates that it is, in fact, motivated by such concerns. On several occasions, Iran has avoided crossing U.S. or Israeli nuclear red lines to avoid prompting a military response. Thus, for some time, Iran avoided crossing the red line implicitly laid down by Israeli prime minister Binyamin Netanyahu in his 2012 UN General Assembly speech, ensuring that its stockpile of 20% enriched uranium did not exceed 250 kg.²¹ More recently, a senior Iranian official stated that Iran would not enrich uranium beyond 60%, reportedly because the United States, the EU, and Israel have indicated that crossing this red line would trigger the snapback of nuclear sanctions—which Tehran may see as a harbinger of worse to come.²² But Tehran may eventually be tempted to test this red line in order to further advance its nuclear ambitions.

Israel is the more immediate but less worrisome threat for Iran, because it can inflict only limited damage on the Islamic Republic, which can hit back hard—unilaterally and via proxies. Iranian officials

have become inured to Israeli threats and are probably more worried that an Israeli strike could draw the United States into a conflict, due to the latter's ability to inflict significant damage on its nuclear infrastructure, as well as military, economic, and leadership targets. Yet for nearly a decade now, Iranian officials have expressed skepticism that the United States would act against Iran's nuclear program.²³ In fact, in

recent years, Tehran has focused mainly on deterring an Israeli preventive strike on its nuclear program, and Israeli attacks on Iranian targets in Syria.²⁴ Tehran has even occasionally struck at U.S. interests in response to Israeli attacks when it seemed that the United States was less likely to respond militarily. By doing so, Tehran apparently hopes to cause the United States to constrain Israel.²⁵

Hedging to Manage Regime Factionalism and Policy Complexity

An often overlooked factor that may have shaped Tehran's hedging strategy is the need to placate diverse regime factions and constituencies—running the gamut from nuclear “supporters,” to “centrists,” to “detractors”—and to reconcile Iran's nuclear ambitions with competing policy objectives (e.g., avoiding isolation, sanctions, or military action).²⁶ For key policy decisions, system-wide consensus is generally required.²⁷ This requires bureaucratic compromise and a *satisficing* approach that yields a “good enough” outcome that gives all factions not quite what they want, but something they can live with—at least temporarily.²⁸

The need for consensus may provide an additional explanation for Khamenei's October 2003 “nuclear fatwa.”²⁹ Issued as part of an effort to engage in damage control and repair Iran's image after its clandestine nuclear program was made public, the fatwa may have also provided a justification—in the religious-ideological idiom of the regime and its supporters—for the October 2003 order to halt nuclear weapons work, and for the hedging and *satisficing* strategies the regime subsequently adopted.

Iran's nuclear hedging strategy may offer it a “good enough” outcome—conferring on it many of the benefits of being a nuclear weapons state without many of the associated risks and costs. This strategy could enable Iran to create a nuclear infrastructure so vast, dispersed, and hardened that an effective preventive military strike may no longer be possible. Moreover, Iran's possession of a “bombproof” breakout capability—a large, dispersed stockpile of high-enriched or weapons-grade uranium, which could be used to rapidly manufacture a nuclear arsenal in a matter of weeks or months during a crisis or conflict—would serve as a latent nuclear deterrent. Adversaries would need to tread lightly vis-à-vis Tehran when tensions flare, lest Iran respond by pursuing a breakout or a bomb.³⁰ The rapid breakout capability afforded by such a hedging strategy might assuage the concerns of at least some hardliners who would have preferred a policy of active proliferation.

Such a hedging strategy could, moreover,

eventually serve as a bridge to the next rung of the proliferation ladder: building a stockpile of unassembled, untested weapons, in order to achieve non-weaponized deterrence—perhaps playing on ambiguities in the NPT regarding the meaning of the Article II prohibition on the “manufacture” of nuclear weapons.³¹ Or Iran could secretly build a ready stockpile of deployed nuclear weapons that would be unveiled in the event of a crisis or war—much as South Africa (which was not an NPT member state at the time) secretly produced a half-dozen nuclear devices by the late 1980s, which it planned to keep under wraps until needed.³² This may have been the original intent of the AMAD Plan, and Iran may have initially adopted its hedging strategy as an alternate proliferation path.

This raises the question of what will happen when Supreme Leader Khamenei, now eighty-three, becomes incapacitated or dies. A hardliner who embraces an extreme religious-ideological worldview, Khamenei, as paramount decisionmaker, would also have endorsed Iran's hedging strategy. He has repeatedly proven willing to defer the realization of Iran's nuclear ambitions in return for sanctions relief, an easing of its international isolation, and the legitimization of its nuclear program, while advancing its nuclear objectives in other ways. In recent decades he has also promoted hardline politicians—many with ties to the IRGC—while overseeing the effective purge of reformers and pragmatic conservatives from positions of power, to secure his political legacy by implementing his program for the “Second Phase of the Islamic Revolution.”³³ This process has accelerated under Iran's current president, Ebrahim Raisi.³⁴

This begs the question of how long Iran may remain in its nuclear hedging holding pattern, once IRGC-affiliated hardliners hold unbridled power. Though the new leadership may opt for policy continuity because the hedging strategy has been so successful, it could also decide that a *satisficing* approach is no longer needed, and attempt to build a bomb—unless efforts are made to alter its proliferation calculus.

Yet there is good reason for Tehran to tread carefully: Washington can be utterly unpredictable. Several presidents who were committed to extricating U.S. troops from Middle East quagmires or avoiding new entanglements in the region, have nonetheless been drawn into conflicts there. Thus:

- After the United States told Saddam Hussein that America did not have an opinion on Iraq-Kuwait tensions in August 1990, President George H. W. Bush organized an international coalition to expel Iraqi forces from Kuwait after they invaded the emirate.
- Following the 9/11 attacks, President George W. Bush—who as a candidate forswore nation building—ordered the invasion of Afghanistan and Iraq and then oversaw in these countries the largest U.S. nation-building efforts since World War II.
- President Barack Obama pledged to end America's military involvement in Iraq and Afghanistan and to keep the country out of a third Middle East war but then organized a multinational coalition to defeat the Islamic State after it captured a third of Iraq in 2014.
- President Donald Trump promised to bring U.S. troops home from the region, but ordered the killing in 2020 of Maj. Gen. Qasem Soleimani, risking escalation with Tehran.³⁵

Likewise, after sending mixed signals in the run-up to the 2022 Russian invasion of Ukraine (perhaps emboldening Moscow), President Joe Biden subsequently led NATO efforts to support the Ukrainian war effort.³⁶ For all these reasons, then, Iranian leaders may conclude that U.S. resolve in matters of war and peace is difficult to assess and best not tested.

Preventing a Proliferation Cascade

Iranian policymakers have only rarely invoked concerns that the country's pursuit of nuclear weapons might set off a regional proliferation cascade that could jeopardize its security. Thus, former president and member of the Supreme National Security Council Hassan Rouhani has stated that "a nuclear weaponized Iran destabilizes the region, prompts a regional arms race, and wastes the scarce resources of the region...[and] will accord Iran no security dividends."³⁷ Likewise, former foreign minister and ambassador to the UN Mohammad Javad Zarif has asserted that "we define our national security in terms of preventing a nuclear arms race and hopefully one day eliminating all nuclear weapons all together."³⁸ And the late head of

Iran's nuclear weapons program, Mohsen Fakhrizadeh, stated that in response to the Middle East's creeping nuclearization, "we need to work on...nuclear defense."³⁹ But even such passing comments are relatively rare.

Perhaps this is because Iranian policymakers believe that most of the country's neighbors are incapable of building nuclear weapons or would not threaten Iran if they were to do so, and that a proliferation cascade would constrain the United States and Israel more than it would constrain Iran. Alternatively, Tehran may harbor such concerns, but its leaders may consider it unseemly to voice them. If so, Tehran's hedging strategy may be driven, at least in part, by a desire to prevent a proliferation cascade. In this case, it does not seem to be working; several regional states have already established civilian nuclear energy programs—at least in part as a hedge against Iran's nuclear program. A proliferation cascade, moreover, could make Iran's hedging strategy untenable over the long run, causing it to revert to active proliferation to stay ahead of its neighbors.

Moral-Religious Considerations

Although Supreme Leader Khamenei has frequently expressed moral and religious qualms about nuclear weapons, traditional Shia sources and many prominent Shia jurists aligned with the regime have indicated that the prohibition on weapons of mass destruction is, in effect, conditional. They believe that Islam permits the acquisition of nuclear weapons to deter and defend against an enemy armed in kind, and allows the use of nuclear weapons against enemy forces on the battlefield and, in extremis, against civilians—if that is what is required to prevail in a war with nonbelievers.⁴⁰

Indeed, this is the logic that has guided Tehran's past proliferation. Thus, Iran developed chemical weapons during the Iran-Iraq War in response to the use of such weapons by Iraq, despite the alleged existence of a religious fatwa banning them.⁴¹ More to the point, it is now known that Iran had a crash nuclear weapons program between 1999 and 2003, despite the alleged ban on nuclear weapons. And while some senior officials, like former intelligence minister Mahmoud Alavi, have recently stated that Iran might reconsider the nuclear fatwa under certain circumstances,⁴² other recent statements by former foreign minister Kamal Kharazi and Atomic Energy Organization of Iran head Mohammad Eslami asserting that Iran now has the technical capacity to build the bomb did not even mention the nuclear fatwa as a potential constraint.⁴³ This shows that, ultimately, the interests of the regime (*maslahat-e nezam*) determine the policy of the Islamic Republic, and if nuclear weapons are deemed necessary to ensure its survival, the regime will not hesitate to acquire or use them.⁴⁴

Conceptual Blinders: How Language Limits, and Reflects the Limits of, the Policy Debate

The way that Iran's nuclear program is often discussed in the United States, Israel, and elsewhere highlights the limitations of the terms, metaphors, and framing concepts that have dominated the policy debate on this subject, and hindered the development of a more effective policy response. The policy debate has frequently focused on Iran's potential paths to a nuclear weapon—the “last mile” at the back end of the proliferation process. It has therefore been dominated by rather esoteric discussions of the technical aspects of enrichment, weaponization, and how Iran might get the bomb. What has been missing is a discussion of how to influence the political, military, economic, and other considerations at the front end of the process that have shaped Tehran's proliferation strategy, and which will influence its future decisions on this matter.

Thus, discussions have often centered on whether Iran is engaged in a “sneak-out,” “slow-motion breakout,”⁴⁵ or is “rushing” to build a bomb.⁴⁶ Likewise, in the early 2000s, Israeli officials often expressed concern that Iran's nuclear program was reaching a “point of no return” wherein the Islamic Republic would have sufficient fissile material and nuclear

know-how to render preventive action ineffective.⁴⁷ In 2012, then Israeli defense minister Ehud Barak expressed concern that Iran was about to enter a “zone of immunity” as a result of the hardening of its program and the acquisition of technical know-how.⁴⁸ And more recently, several former Israeli officials expressed concern that a new nuclear deal with Iran would confirm and legitimize its status as a “nuclear threshold state”⁴⁹—even though, by most definitions, Iran has occupied a position somewhere on the threshold spectrum for some years now.

This framing of the discussion has resulted in a narrow policy focus on disruption and deterrence, or on coercive strategies to facilitate deals that temporarily and partially reverse Iran's nuclear program. Although these are essential elements of any shaping strategy, this focus comes at the expense of a more holistic approach. Such an approach would seek to dissuade and deter, and use all the instruments of national power to shape the full array of factors at the front and back ends of the proliferation process, to influence Tehran's proliferation calculus. In this way, the Islamic Republic may be convinced that proliferation restraint is in its interest.

Notes

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Policy Recommendations: Shaping the Islamic Republic's Proliferation Calculus

For more than a decade now, U.S. nonproliferation policy toward Iran has relied largely on diplomacy and economic sanctions to build leverage in order to present Tehran with a dilemma: it can have either a viable economy or nuclear weapons—but it cannot have both. Other potential sources of leverage, such as cyber activities, have generally played a more limited role.¹

U.S. policy toward Iran has tended to eschew military threats. Critics have called on Washington to incorporate the credible threat of force into its policy toolkit to deter Tehran from building a bomb. They argue that fears of an attack by the United States played a role in Iran's decision to largely halt nuclear weapons work in 2003 and after. Israeli threats may have likewise helped convince Iran to continue hedging during the early phases of the bilateral U.S.-Iran diplomacy that led to the JCPOA.²

The military instrument is an essential element of any shaping strategy, but it may not be sufficient; Tehran might doubt that the United States actually poses a military threat to its nuclear program given the latter's diffidence in the face of lesser provocations by Iran. And Iran's proliferation calculus likely takes account of a range of nonmilitary factors.³

Moreover, a nonproliferation policy based largely on economic (and military) coercion will work only as long as pressure can be sustained—a challenging task for a great power with global commitments in a time of rapid geopolitical change. Thus, tensions with Beijing have made it hard to convince China to cut oil purchases from Iran, and led the United States to redeploy forces from the Gulf to the Indo-Pacific region. A shaping strategy that employs pressure, but that also attempts to persuade Tehran that active proliferation would jeopardize other important policy objectives, may be a more sustainable and effective long-term approach.

Such a shaping strategy should play on or foster concerns among Iranian decisionmakers about the risks, costs, and uncertain benefits of pursuing a nuclear *buildup, breakout, or bomb*. It should use all the instruments of national power—diplomatic, informational, military, economic, and cyber—to shape as many of the

factors that influence Tehran's proliferation calculus as possible, in order to strengthen incentives for proliferation restraint.

Thus, Washington should not just focus on preventing Tehran from building a bomb, but should prevent it from further stockpiling high-enriched uranium and from producing weapons-grade uranium. The United States should strive to avert even this “lesser” outcome, which could provide Tehran with a latent nuclear deterrent, accelerate the region's nascent proliferation cascade, and facilitate Iran's eventual return to active proliferation.

This strategy should seek to convince Tehran that the stockpiling of high-enriched or weapons-grade uranium, the diversion of these stocks to unsafeguarded sites, or the manufacture of nuclear weapons would cross its red lines and could:

- Further deepen Iran's international isolation.
- Spur stricter enforcement of sanctions and catalyze efforts to destabilize the Islamic Republic.
- Create vulnerabilities and increase the potential for miscalculation in a crisis or conflict, conferring meager benefits that would be overshadowed by the risks involved.
- Prompt a preventive military strike on its nuclear program that could spark a broader, more destructive conflict.
- Spark a regional proliferation cascade that could pose an existential threat to Iran.

To advance this shaping strategy, Washington should exploit Khamenei's traditional innate caution, his general aversion to risk, and his apparent ambivalence about how best to advance his nuclear ambitions. It should reinforce the near-universal tendency of decisionmakers to defer difficult and potentially risky decisions under conditions of uncertainty by “kicking the can down the road.”⁴ And it should build on one of the

most important insights from behavioral economics—that humans tend to be more strongly motivated by the desire to avoid or minimize loss than by the prospect of gain.⁵ If encouraged, these tendencies might cause Iranian decisionmakers to defer a decision to abandon their hedging strategy.

Several other factors will likely influence Iran's proliferation calculus, though exactly how is impossible to say. Will the success of Tehran's hedging strategy cause it to double down on this approach—especially now that it has conventional missiles and drones that are true weapons of mass disruption and destruction? Or will Iran's progress toward ever-higher levels of enrichment make the prospect of a bomb too tempting to pass up? And how much will such a decision hinge on Iran's assessment of the likelihood that the United States or Israel would respond militarily to the crossing of their red lines? The answers to these questions may be unknowable, and Supreme Leader Khamenei may not have settled these matters in his own mind, but how they are answered will affect Tehran's choices.

The following section, then, addresses how to shape Tehran's proliferation calculus:

Reinforcing the threat of isolation, marginalization. The United States has long sought to pressure Iran by isolating it. This is an effective form of leverage because the Islamic Republic finds its treatment as a pariah by many influential countries to be onerous, humiliating, and a hindrance to its ambition of becoming a global player. Therefore, the United States should work with allies and partners, as well as China and Russia, to build a consensus about isolating Iran politically should it continue its buildup of high-enriched uranium or produce weapons-grade uranium, divert these stockpiles to unsafeguarded facilities, or attempt to build a bomb. Iran needs to hear from as many countries as possible about the adverse consequences of pursuing any of these options. Deepening ties between Iran, Russia, and China, and rising tensions between the United States and these other great powers, however, will make cooperation on this matter more difficult than ever before.

Gaining support from regional partners to isolate Iran will also prove more difficult than in the past. Trust in America's judgment, competence, and reliability has been undermined by: (1) U.S. policy missteps in Iraq and Syria that inadvertently enhanced Iran's regional influence; (2) a nuclear deal with Iran that was seen by many in the region as coming at the expense of their vital interests; and (3) Washington's failure to respond effectively to attacks by Iran and its proxies on U.S. interests and on its Gulf partners. The latter are therefore likely to continue hedging their bets by continuing to do business and engaging in "de-escalatory diplomacy" with the Islamic Republic. This will make

it more difficult for Washington to isolate Iran, unless it is willing to push back more consistently against Iran's destabilizing regional activities than it has in the past.

Achieving sanctions/"soft warfare" synergies.

Tehran's willingness to forgo hundreds of billions of dollars of income in recent decades because of nuclear-related sanctions underscores the importance it attaches to its nuclear program. Yet its willingness to temporarily halt or partially reverse elements of its nuclear program to avoid new sanctions or obtain sanctions relief shows what the regime will do to keep the economy afloat and ensure its survival. It also indicates that acquiring a nuclear weapon has been an aspirational goal but not an urgent priority for the regime—at least thus far.

In recent years, however, economic realities, geopolitics, and the terms of debate in Tehran have been shifting in ways that may reduce the efficacy of sanctions. There are several reasons for this: (1) Iran's economy is increasingly diversified and less dependent on oil and gas exports; (2) global demand for oil still exceeds supplies—and is likely to do so for some time; (3) the emerging multipolar world order undermines the effectiveness of U.S. sanctions as great and rising powers like Russia, China, and India increasingly ignore U.S. preferences; and (4) some Iranian officials may believe that a self-sufficient "resistance economy" can help the country weather sanctions.⁶ Furthermore, experience has shown that although harsh sanctions can be compelling, attempts to exert "maximum pressure" (e.g., by halting all of Iran's oil exports) could spur a military response by Iran. Maximum pressure therefore requires maximum deterrence—but this would necessitate the kind of proactive military posture that recent U.S. administrations have been unwilling to embrace.

Thus, the threat of "crushing" sanctions may in the future no longer deter Tehran from pursuing a buildup, breakout, or bomb. To bolster the efficacy of this threat, Tehran should understand that the United States would respond to any of these actions not only with harsh sanctions but also with a campaign of sabotage, subversion, and propaganda (what Tehran calls "soft warfare") that builds on sanctions to destabilize the regime.⁷ Having seized power through revolution, the Islamic Republic's leadership fears counterrevolution more than anything else; threats of instability and unrest would therefore hopefully have a deterrent effect.

Tehran, however, believes that the United States is behind periodic bouts of unrest in Iran, and is therefore already waging soft warfare against the Islamic Republic.⁸ While Washington provides moral support for Iranian protesters fighting for their rights and freedom, and material support to help them circumvent regime efforts to suppress the flow of ideas and information, it should quietly signal to Tehran that the United States would greatly escalate these efforts if Iran were to cross

any of its nuclear red lines.⁹ The synergy created by diplomatic, economic, and military pressures combined with a campaign of sabotage and subversion might provide the leverage needed to resolve a nuclear crisis initiated by Iran. And while some might object that such actions would be provocative and escalatory, it should be noted that by interfering in the 2020 elections and plotting attacks in the United States against former officials and Iranian dissidents, Tehran has already crossed an American red line.¹⁰

Not just “not useful”: the risk of sabotage, miscalculation, and a nuclear apocalypse. Perhaps one of the most effective ways to shape Iran’s proliferation calculus may be an information campaign that causes it to consider the vulnerability of a potential nuclear arsenal to sabotage and cyberattacks, the destabilizing potential of a dual-use (conventional- and nuclear-armed) missile force, and its own vulnerability to nuclear weapons. While the U.S. government would have an important role to play in enabling the success of such a campaign, many of these information activities would be best carried out by individuals and NGOs better positioned to convey these messages to civil society actors and policymakers in Iran.

Sabotage, cyber threats, and stockpile security. Information activities should raise doubts about the safety, security, and reliability of a potential Iranian nuclear arsenal. They should play on the regime’s conspiratorial mindset and its concerns about foreign intelligence penetration, sabotage, and cyberattacks, as well as the country’s lack of an institutionalized safety culture.

For many years now, Iran’s nuclear program has been targeted by Israel, the United States, and others. Equipment has been sabotaged; senior scientists have been killed; sensitive nuclear facilities have been damaged by explosive, cyber, and drone attacks; and nuclear archives have been removed from the country for exploitation by foreign intelligence services. Moreover, Iran’s military has inadvertently sunk its own ships¹¹ and shot down foreign airliners,¹² while its civilian industries are plagued by industrial accidents.¹³ Iran’s leaders must consider the implications of all these factors for the safety, security, reliability, and credibility of a potential nuclear arsenal.¹⁴

U.S. information activities, then, should cause Iranian decisionmakers to wonder whether potential nuclear weapons might contain fatal design flaws or defective components introduced by foreign intelligence services or saboteurs that might render them ineffective or cause them to detonate over Iranian territory. They should reinforce Iranian concerns about the possibility of “left of launch” attacks—cyberattacks or sabotage of delivery systems that could cause missiles or drones to self-destruct before or after launch. (The United States is believed to have already conducted



Donald J. Trump
@realDonaldTrump

The United States of America was not involved in the catastrophic accident during final launch preparations for the Safir SLV Launch at Semnan Launch Site One in Iran. I wish Iran best wishes and good luck in determining what happened at Site One.



6:44 pm · 30 Aug 2019 · Twitter for iPhone

Figure 3. President Trump’s Tweet: Hinting at Sabotage?

such attacks against both North Korea and Iran; see figure 3).¹⁵ And they should cause them to think about how cyberattacks might affect the functioning of Iran’s early warning and command-and-control systems—raising questions about the efficacy and reliability of a potential nuclear force.

These activities should likewise cause Iranian decisionmakers to consider the possibility that drone or missile delivery systems might be misdirected or rerouted as a result of cyber manipulation, GPS spoofing, or the intentional entry of incorrect target data by insiders working for foreign intelligence services, so that they target sites in Iran—rather than in enemy territory.¹⁶ And they should be led to consider the possibility that Iranian nuclear weapons might be vulnerable to diversion or theft by opportunistic or disaffected military personnel and used to blackmail the regime or to destroy regime targets (e.g., IRGC bases)—or used without authorization against Iran’s enemies, provoking a massive retaliatory response. Growing disaffection with the system and intensified unrest among military-age youth in Iran will only magnify these risks.

This creates a further dilemma for Tehran: concerns that foreign intelligence services might sabotage weapons and delivery systems could limit the utility and appeal of a clandestine nuclear arsenal of questionable reliability. Yet weapons tests would almost certainly be detected, potentially transforming Iran into a North Korea-like pariah state. This may be another reason to not build nuclear weapons.

Dual-use missiles and deterrence stability. The deployment of nuclear-armed missiles would create

new capabilities, as well as risks and dilemmas, for the Islamic Republic. Short flight times between Iran and Israel (7–10 minutes) and the absence of a crisis hotline between the two countries might cause Israel to respond to Iran's deployment of nuclear-tipped missiles by adopting a launch-on-warning nuclear posture and by pre-delegating use authority to military commanders. This could increase the risks of miscalculation and the use of nuclear weapons during a crisis or war.¹⁷

Iran's fielding of nuclear-armed missiles would thus add a destabilizing element to the Israel-Iran deterrence equation. Matters would be even worse if certain units were dual use (both conventional- and nuclear-armed), or if dedicated conventional and nuclear units or delivery systems were to deploy to adjacent or overlapping operational areas during a crisis or war.¹⁸ Signals would more likely be misunderstood, and in the event of an attack, Israel might not be able to discern whether incoming Iranian missiles were conventional or nuclear. It would then be confronted with the choice of absorbing what might be a devastating nuclear first strike, or launching a prompt nuclear "counterstrike" in response to what might turn out to be a conventional attack.¹⁹

Israel's upper-tier missile defenses exist, in part, to deal with such a scenario. Their purpose in the event of a nuclear attack would be to preserve Israel's ability to launch a devastating nuclear second strike with land- and sea-based missiles and combat aircraft.²⁰ Because some Iranian missiles might get through these defenses, Israel could be expected to keep its nuclear forces on hair-trigger alert during a crisis or war. Reckless Iranian rhetoric, moreover, including ritual calls for Israel's destruction, might incline Israeli decisionmakers to interpret Iranian actions in the darkest possible light—further increasing the potential for miscalculation.²¹

The possibility that a massive conventional missile strike might be mistaken by Israel for a nuclear strike and prompt a massive nuclear counterstrike could complicate Iran's military calculus. Tehran might therefore lean on Lebanese Hezbollah during a crisis or conflict to act on its behalf and launch barrages of missiles against Israel. But this could jeopardize its most important regional proxy.

Alternatively, Tehran might try to mitigate risk by launching small salvos of conventional missiles against Israel (at least initially), to reduce the potential for a nuclear response. This, however, would increase the odds of interception by Israel's missile defenses. To enable small salvos to evade Israeli defenses, Iran might deploy missiles with penetration aids and countermeasures (simple decoys, a modest terminal-phase maneuver capability, chaff, or low-power electronic countermeasures).²² In a prolonged conflict, Iran might incrementally increase the size of its salvos to improve the chances of their getting through, and to normalize

the use of conventional missiles against Israel. But this could increase the risk of miscalculation.

A less prudent and more risk-acceptant Iranian leadership, however, might discount this possibility and launch massive conventional saturation strikes, convinced that Israel would never dare respond with nuclear weapons. The menacing atmosphere created by hostile Iranian propaganda and the use of eliminationist language vis-à-vis Israel—playing on Jewish existential fears and historical traumas—could, however, increase the odds of just such a response.

Thus, the creation of a dual-use missile force in Iran could create a form of nuclear ambiguity that could increase the potential for miscalculation in a crisis or war. It could also render Iran's arsenal of conventionally armed missiles less useful by creating a situation in which their employment might inadvertently pose an existential risk for Iran. The leaders of the Islamic Republic will hopefully bear this in mind when considering how the development, production, and deployment of nuclear weapons could affect their security.

Iran's nuclear vulnerabilities. Iran's public discussion about its nuclear program has traditionally been highly circumscribed, focusing mainly on the regime's proclaimed "right to enrich" and the supposed benefits of nuclear energy and technology.²³ The debate has addressed neither the vulnerabilities—to earthquakes, cyberattacks, sabotage, terrorism, or military strikes—of the nuclear enterprise that Iran is building nor the possibility that its nuclear program could spur neighboring states to pursue nuclear weapons.²⁴ And because the regime has disavowed any interest in nuclear weapons—even while acquiring the means and the know-how to build them—no public discussions have occurred about the horrifying realities of nuclear war. Iranian officials have even mused about Israel's vulnerability to nuclear weapons due to its small size and densely populated coastal region, while overlooking their own country's vulnerabilities.

Thus, former president Akbar Hashemi Rafsanjani suggested in a 2001 speech during the annual Qods (Jerusalem) Day ceremonies that

if one day, the Islamic world is also equipped with weapons like those that Israel possesses now, then the strategy of global arrogance will reach a standstill because the use of even one nuclear bomb inside Israel will destroy everything. However, it will only harm the Islamic world. It is not irrational to contemplate such an eventuality.²⁵

Yet with 75% of its population living in cities, Iran is one of the most heavily urbanized countries in the Middle East and Asia, making it particularly vulnerable to a nuclear strike. And with so much of the country's governmental, industrial, and educational infrastructure

Iran's Vulnerability to a Nuclear Strike

A 2013 study by researchers associated with the Institute for Disaster Management at the University of Georgia simulated the consequences of a nuclear war between Israel and Iran using unclassified weapons effects and fallout prediction software and programs. The study assumed that an Israeli strike would consist of some forty-two weapons (one-quarter to one-half of Israel's presumed arsenal) of various yields (15–500 kilotons) against Iran's eighteen largest cities, including Tehran, Mashhad, Isfahan, Karaj, Tabriz, and Shiraz. It assumed that several larger cities, including Tehran, would be subjected to multiple strikes.²⁶

The study predicted very large numbers of fatalities because of the compact form of Iranian cities, poor building construction standards, and the inability of Iran's healthcare system to handle massive numbers of burn, trauma, and radiation patients—many of whom would die from inadequate care. Casualty estimates exceeded twenty million dead (including nearly all of Tehran's residents in some scenarios) and two million injured. A larger Israeli strike would result in correspondingly greater casualties. In either case, the consequences for Iran would be devastating (see figure 4).²⁷

Thus, a nuclear strike would kill tens of millions of Iranians immediately and many millions more in the months and years to come, as they succumbed to their injuries, hunger, disease, and radiation exposure. Much of the country's healthcare system and utilities (electricity, water, and sewage) would be destroyed in a strike, and what remained would be overwhelmed by the needs of survivors. The likely result would be a public health crisis and epidemics that would claim many additional lives. The collapse of the food distribution system could lead to mass starvation in some areas, and malnutrition elsewhere.

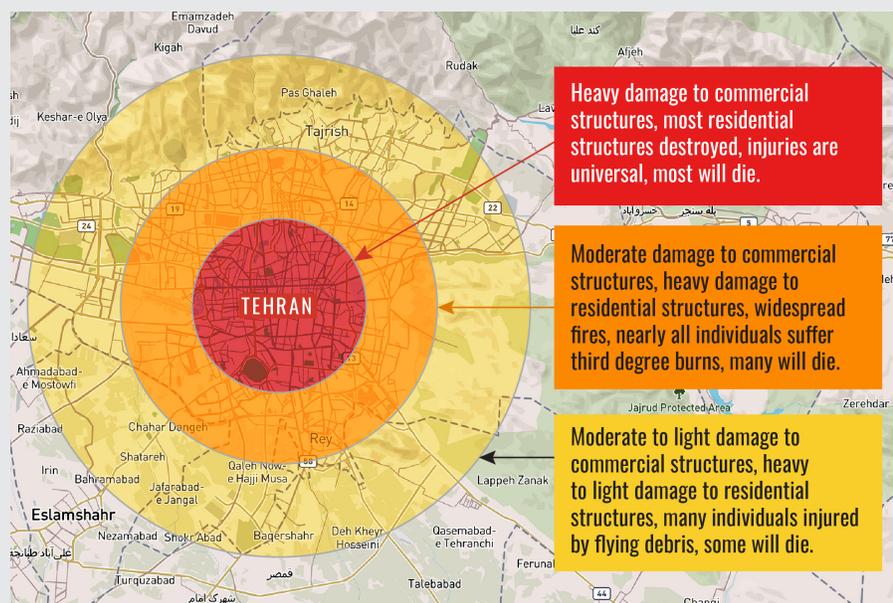


Figure 4. Effects of a 1 MT Nuclear Air Burst over Tehran

Source: Adapted from Alex Wellerstein, NUKEMAP 2.72, <https://nuclearsecrecy.com/nukemap/>.

A one-megaton device detonated over Tehran would kill a significant proportion of the city's residents and affect the entire country.²⁹ More than 15 percent of all Iranians live in Greater Tehran, which includes more than 50 percent of the country's industry, 30 percent of its public-sector workforce, and most of its higher education institutions (fifty colleges and universities).³⁰ In a flash, millions of people, the central government, and much of the country's economy would be wiped out. Tehran is a nearly ideal nuclear target because the mountains that bound the city would act as natural reflectors—thereby intensifying the effects of a nuclear blast.³¹

Many areas would also experience a breakdown in public order, resulting in looting and widespread lawlessness, as well as a loss of social cohesion. The functioning of the national economy would be severely disrupted through mass casualties to the workforce and damage to the manufacturing and agricultural sectors. This, plus the destruction of central government institutions in Greater Tehran, would greatly hinder the country's recovery. Iran's stature in the region would be much diminished as it struggled to recover from the impact of nuclear war. Even a limited nuclear strike would be remembered in Iran as a catastrophe on par with the Mongol invasion of Iran in the thirteenth century, whose impact was felt for hundreds of years. Given the magnitude of the climate, environmental, social, and demographic challenges that Iran (and much of the region) will face in the coming decades, a nuclear exchange might be a disaster from which it never recovers.²⁸

concentrated in Tehran, it is particularly vulnerable to a devastating decapitation strike against the capital (see box, “Iran’s Vulnerability to a Nuclear Strike”).

The world came close to nuclear war on several occasions during the Cold War—at the height of the 1962 Cuban Missile Crisis, during the 1973 Arab-Israeli war, and as a result of numerous false alarms and accidents.³² Similar scenarios could arise if Iran were to acquire nuclear weapons (as discussed in the previous two sections). Risks would be magnified, and matters complicated further, if Iran’s nuclear hedging eventually produced a destabilizing regional nuclear arms race. In light of these risks, Iran would benefit greatly from the kind of discussion about nuclear weapons that occurred in the United States and elsewhere in the 1960s and 1970s.

This discussion occurred thanks to the efforts of antinuclear activists and of movies such as *On the Beach* (1959), *Dr. Strangelove* (1964), *Fail-Safe* (1964), *The Bedford Incident* (1965), and *The Day After* (1983), which helped educate citizens in the world’s democracies about the potential limits of nuclear deterrence and the horrors of nuclear war. And public opinion eventually provided the impetus for efforts to wind down the Cold War—era arms race through arms control agreements that helped reduce tensions between the United States and the Soviet Union and led to dramatic cuts in their nuclear arsenals.³³

It may seem unrealistic to expect such a public discussion in Iran or for it to influence the Islamic Republic’s policy, given the extent to which the regime controls public discourse. However, experience has shown that despite its authoritarian nature (and increasingly totalitarian aspirations), the Islamic Republic is sometimes responsive to domestic opinion. Thus, Tehran has generally avoided potentially costly foreign entanglements—relying on Arab and other proxies to do its bidding whenever possible—given the lingering popular trauma from the Iran-Iraq War. At home, it has periodically relaxed enforcement of its Islamic dress code as well as its ban on satellite dishes, recognizing the unpopularity of these measures.

Because Tehran has not yet declared the acquisition of nuclear weapons as a national goal, a public discussion of this topic—however circumscribed—might help ensure that the Islamic Republic does not build a bomb. Sparking such a discussion in Iran is particularly important because of the growing influence of hardliners who may be more likely to support the development of nuclear weapons.³⁴ U.S. policy should work to forestall the emergence of an elite consensus in Iran regarding the desirability of acquiring a nuclear arsenal, in order to make it more likely that Iran will continue hedging.³⁵ It is hopefully not too late for such a debate, and the U.S. government and independent NGOs should do what they can to start one by disseminating, via social media,

factual information in Persian about nuclear weapons and their effects, as well as the aforementioned movies (with Persian subtitles).

American unpredictability and the “credible threat of force.” Though President Biden has been criticized for not responding militarily to many of Iran’s destabilizing regional activities,³⁶ he has staked out a bold declaratory policy vis-à-vis the Islamic Republic’s nuclear weapons program, vowing that “Iran will never get a nuclear weapon on my watch.”³⁷ In the U.S.-Israel Strategic Partnership Joint Declaration signed by President Biden and Israeli prime minister Yair Lapid in Israel in July 2022, Biden went even further, committing the United States “never to allow Iran to acquire a nuclear weapon,” while emphasizing that the United States “is prepared to use all elements of its national power to ensure that outcome.”³⁸ During his speech to the GCC+3 Summit in Jeddah several days later, Biden reiterated that “the United States is committed to ensuring that Iran never gets a nuclear weapon.”³⁹ However, effective messaging is 20% words and 80% action; Washington will need to act to sharpen the impact of these robust declarations.

The United States often surprises adversaries and friends alike with its foreign policy U-turns (see the discussion in chapter 3 regarding American unpredictability). Washington should use this reputation to keep Tehran in a state of nervous anticipation about its stance toward Iran’s nuclear program. It should quietly inform Tehran that pursuing a buildup, breakout, or bomb would result in unprecedented diplomatic, economic, and military pressure. The Islamic Republic should understand that it would risk not only the destruction of its nuclear infrastructure, but the destruction of important military and economic targets and the targeting of key officials in the nuclear and military chains of command.

The credible threat of force is an essential element of any shaping strategy, although for good reason the United States and Israel consider preventive military action as an option of last resort. A U.S. preventive strike on Iran’s nuclear infrastructure would likely consist of both kinetic action and cyberattacks, and prompt a wave of Iranian drone, missile, and proxy attacks on U.S. military bases in the region, and on targets in regional states perceived to have supported an attack.⁴⁰ The Islamic Republic might also launch cyberattacks on U.S. critical infrastructure, though it probably lacks the ability to achieve truly strategic effects in this fashion.

Tehran’s military riposte would undoubtedly be a harrowing experience for those on the receiving end, though it would likely calibrate its response, given America’s escalation dominance and ability to wreak havoc on the Islamic Republic’s military and economic infrastructure. It is likely that given the opportunity,

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Tehran would rapidly de-escalate and revert to the kind of low-level “gray zone” activities that it has engaged in for decades. Moreover, Iran’s ability to escalate is constrained, in part, by the need to avoid unnecessarily alienating the many states that are dependent on oil and gas from the region (especially China). It is thus unlikely that a preventive strike would spark a war, something that both the United States and Iran want to avoid, and have succeeded in doing for over forty years now.⁴¹

An Israeli preventive strike, by contrast, has the potential to evolve into a broader, longer conflict involving a range of actors, from Lebanese Hezbollah to Iraqi proxy militias, and even (to a limited degree) to the Houthis in Yemen.⁴² And there is always the chance that it could eventually draw in the United States—a worst-case scenario for Iran—which is why the Islamic Republic wants to avoid even an Israeli strike. Conversely, a preventive strike by either the United States or Israel might cause Tehran to withdraw from the NPT and abandon its hedging strategy and go for the bomb, once its nuclear infrastructure is rebuilt.⁴³

A U.S. or Israeli preventive strike might also drag Lebanese Hezbollah into the fray, causing severe damage to the group’s heavy rocket and missile force—the backbone of Iran’s strategic deterrent—and great harm to Iran’s most important regional proxy. Hezbollah, for its part, would face a dilemma: how to fulfill its obligations toward Tehran without doing grievous harm to its supporters or its civilian and military infrastructure.⁴⁴

To sharpen the impact of U.S. commitments to prevent Iran from getting the bomb, the United States

should demonstrate greater risk acceptance in countering Iran’s regional activities than it has until now. Such actions would speak louder than any words. The United States should respond to gray zone attacks by Iran and its proxies with a gray zone campaign of its own, employing largely covert and unattributed activities to impose costs on the Islamic Republic, while managing escalation and avoiding a broader conflict.⁴⁵

Past failures to effectively counter Tehran’s activities in the region have often emboldened Iran and its proxies and led to more attacks on U.S. interests, as well as the testing and crossing of nuclear red lines. Tehran would likely see U.S. pushback against its regional activities, as well as the development and testing of capabilities needed for a preventive strike by the United States or its allies,⁴⁶ as a token of America’s willingness to respond militarily to an attempt by Iran to pursue a buildup, breakout, or bomb. In this way, efforts to curb Iran’s nuclear ambitions and to counter its destabilizing regional activities are inextricably intertwined.

In adopting a more proactive approach, however, Washington should—when possible—steer clear of Tehran’s own red lines. Thus, it should avoid trying to completely halt all of Iran’s oil exports unless it is prepared to deal with a military response. It should eschew overt attacks on Iranian soil unless responding in kind to an Iranian attack or the crossing of its nuclear red lines. And it should not overtly pursue regime change in Tehran unless its vital interests dictate that it do so—and it is prepared for a harsh response by a regime fighting for its very survival.⁴⁷

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27. Ibid.
28. Saeid Ashraf Vaghefi, “The Future of Extreme Climate in Iran,” *Scientific Reports* 9, no. 1464 (February 6, 2019), <https://www.nature.com/articles/s41598-018-38071-8>; Richard Cincotta and Karim Sadjadpour, *Iran in Transition: The Implications of the Islamic Republic’s Changing Demographics* (Washington DC: Carnegie Endowment for International Peace, 2017), <https://carnegieendowment.org/2017/12/18/iran-in-transition-implications-of-islamic-republic-s-changing-demographics-pub-75042>. There is a large and growing literature on how empires and civilizations collapse due to climate change, demographic pressures, pandemics, and war. See, e.g., Miroslav Barta and Martin Kovar, *Civilisations: Collapse and Regeneration—Addressing the Nature of Change and Transformation in History* (Prague: Academia, 2019); Kyle Harper, *The Fate of Rome: Climate, Disease, and the End of an Empire* (Princeton, NJ: Princeton University Press, 2017); and Sing C. Chew, “From Harappa to Mesopotamia and Egypt to Mycenae: Dark Ages, Political-Economic Declines, and Environment/Climatic Changes 2200 B.C.–700 B.C.,” in *The Historical Evolution of World Systems*, ed. Christopher Chase-Dunn and E. N. Anderson (New York: Palgrave MacMillan, 2005), 52–74.
29. A one-megaton device (equal to one million tons of TNT) is roughly equivalent in yield to missile-delivered weapons used by several of the original nuclear weapons states. Previous studies have attributed to Israel the ability to build a weapon with such a yield. See Anthony H. Cordesman, “Iran, Israel, and Nuclear War,” Center for Strategic and International Studies, November 19, 2007, <https://www.csis.org/analysis/iran-israel-and-nuclear-war>. By way of comparison, the Hiroshima bomb was a sixteen-kiloton device (equal to 16,000 tons of TNT), while the largest nuclear weapon ever created was a fifty-megaton device tested by the Soviet Union in 1961 (equal to 50 million tons of TNT).
30. Cham E. Dallas et al., “Nuclear War Between Israel and Iran: Lethality Beyond the Pale,” *Conflict and Health* 7, no. 10 (2013), <https://conflictandhealth.biomedcentral.com/articles/10.1186/1752-1505-7-10>; and Cordesman, “Iran, Israel, and Nuclear War,” <https://www.csis.org/analysis/iran-israel-and-nuclear-war>.
31. Cordesman, “Iran, Israel, and Nuclear War,” <https://www.csis.org/analysis/iran-israel-and-nuclear-war>.
32. Geoffrey Forden, “Reducing a Common Danger: Improving Russia’s Early-Warning System,” Policy Analysis 399 (Washington DC: Cato Institute, May 3, 2001), <http://www.cato.org/sites/cato.org/files/pubs/pdf/pa399.pdf>; and Scott Sagan, *The Limits of Safety: Organization, Safety, and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993).
33. Lawrence Wittner, *Confronting the Bomb: A Short History of the World Nuclear Disarmament Movement* (Stanford, CA: Stanford University Press, 2009). See also Lawrence Wittner, “How Disarmament Activists Saved the World from Nuclear War,” talk delivered in May 2013 to the Canadian Network to Abolish Nuclear Weapons, Ottawa, *Peace Magazine* 29, no. 4 (October–December 2013): 6, <http://peacemagazine.org/archive/v29n4p06.htm>.
34. Gerami, *Leadership Divided?* 20–22, <https://www.washingtoninstitute.org/policy-analysis/leadership-divided-domestic-politics-irans-nuclear-debate>.
35. According to Vipin Narang, the emergence of a consensus in favor of nuclear weapons often heralds a shift from hedging to a strategy of active proliferation. As a result, it is critical to keep domestic opinion regarding the desirability of nuclear weapons fractured to “[forestall] proliferation and keeping...hedger(s) hedging.” See Vipin Narang, *Seeking the Bomb: Strategies of Nuclear Proliferation* (Princeton, NJ: Princeton University Press, 2022), 6.
36. Courtney Kube, Carol E. Lee, and Dan De Luce, “Iran-Backed Militias’ Attacks Against U.S. Targets Are Up. The U.S. Hasn’t Responded with Force Since Last Year,” NBC News, June 10, 2022, <https://www.nbcnews.com/politics/national-security/attacks-iran-backed-militias-us-target-are-us-hasnt-responded-force-20-rcna32892>.
37. Alexander Smith, “Biden Tells Israel that Iran ‘Will Never Get a Nuclear Weapon on My Watch’” NBC News, June 29, 2021, <https://www.nbcnews.com/news/world/biden-tells-israel-iran-will-never-get-nuclear-weapon-my-watch-1272591>.
38. White House, “The Jerusalem U.S.-Israel Strategic Partnership Joint Declaration,” July 14, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/07/14/the-jerusalem-u-s-israel-strategic-partnership-joint-declaration/>.
39. White House, “Remarks by President Biden at the GCC+3 Summit Meeting,” July 16, 2022, <https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/07/16/remarks-by-president-biden-at-the-gcc-3-summit-meeting/>.
40. Ali Alfoneh, “IRGC Navy Warns Arab States Against Cooperation with Israel,” Arab Gulf States Institute in Washington, September 6, 2022, <https://agsiaw.org/irgc-navy-warns-arab-states-against-cooperation-with-israel/>.

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41. See Michael Eisenstadt, "Were Iran and the United States Really 'on the Brink'? Observations on Gray Zone Conflict," *Lawfare*, September 27, 2020, <https://www.lawfareblog.com/were-iran-and-united-states-really-brink-observations-gray-zone-conflict>.
42. Nadav Ben Hour and Michael Eisenstadt, "The Great Middle Eastern War of 2019," *American Interest*, August 20, 2019, <https://www.washingtoninstitute.org/policy-analysis/great-middle-eastern-war-2019>.
43. If so, this would not be the first time that a conflict altered a state's proliferation calculus; the 1967 Arab-Israeli war caused Israel to go from hedging to active proliferation. Avner Cohen, "Crossing the Threshold: The Untold Nuclear Dimension of the 1967 Arab-Israeli War and Its Contemporary Lessons," *Arms Control Today* 37, no. 5 (June 2007): 12–16, <https://www.armscontrol.org/act/2007-06/features/crossing-threshold-untold-nuclear-dimension-1967-arab-israeli-war-its>. Likewise, the 1981 Osirak raid caused Iraq to revamp and greatly expand its nuclear program and to take a much more focused and serious approach to proliferation. Bennett Ramberg, "Osirak and Its Lessons for Iran Policy," *Arms Control Today* 42, no. 4 (May 2012): 40–43, <https://www.armscontrol.org/act/2012-05/osirak-its-lessons-iran-policy>.
44. Hezbollah's Secretary-General Hassan Nasrallah could try to manage this tension by launching limited rocket, drone, and missile strikes against Israel from Lebanon and conducting terrorist attacks overseas, but he could not be sure he would be able to avoid yet another ruinous war with Israel, as occurred in 2006. See Associated Press, "Nasrallah: 'If I Had Known...,'" CBS News, August 27, 2006, <https://www.cbsnews.com/news/nasrallah-if-i-had-known/>. It is also possible, as Nasrallah has suggested on several occasions, that Hezbollah would do nothing at all—though comments to this effect may be calculated to reassure his supporters, as it would be very hard for Hezbollah to completely avoid getting dragged into a conflict between Israel and Iran. See "Nasrallah: If Israel Attacks Iran, Hezbollah Won't Necessarily Join Fight," *Times of Israel*, February 9, 2022, <https://www.timesofisrael.com/nasrallah-if-israel-attacks-iran-hezbollah-wont-necessarily-join-fight/>.
45. Michael Eisenstadt, *Operating in the Gray Zone: Countering Iran's Asymmetric Way of War*, Policy Focus 162 (Washington DC: Washington Institute, 2020), <https://www.washingtoninstitute.org/policy-analysis/operating-gray-zone-countering-irans-asymmetric-way-war>; and Michael Eisenstadt, *Deterring Iran in the Gray Zone: Insights from Four Decades of Conflict*, Policy Note 103 (Washington DC: Washington Institute, 2021), <https://www.washingtoninstitute.org/policy-analysis/deterring-iran-gray-zone-insights-four-decades-conflict>.
46. See, e.g., Joseph Trevithick, "The Air Force's New 5,000-Pound Bunker Buster Bomb Breaks Cover," *The Drive*, October 12, 2021, <https://www.thedrive.com/the-war-zone/42714/the-air-forces-new-5000-pound-bunker-buster-bomb-breaks-cover>; Joseph Trevithick, "Air Force Updates Massive Ordnance Penetrator Bombs amid New Iranian Nuclear Posturing," *The Drive*, November 5, 2019, <https://www.thedrive.com/the-war-zone/30872/air-force-updates-massive-ordnance-penetrator-bombs-amid-new-iranian-nuclear-posturing>; and Bradley Bowman and Enia Krivine, "Israel Has a KC-46 Problem. Here's the Solution," *Defense News*, April 21, 2022, <https://www.defensenews.com/opinion/commentary/2022/04/21/israel-has-a-kc-46-problem-heres-the-solution/>.
47. In countering the Trump administration's "maximum pressure" policy, Tehran was apparently willing to live with crushing sanctions that allowed some oil exports, but it responded forcefully to subsequent attempts, in May 2019, to completely halt them. Tehran has, moreover, been unable to respond effectively to every Israeli or American cyberattack on its critical infrastructure (e.g., the Stuxnet attacks between 2007 and 2010). Iran's 2012 Aramco cyberattack was seen as payback for Stuxnet or for a cyberattack on Iran's Kharg Island. It seems likely, however, that Tehran would respond harshly to overt U.S. attempts to foment regime change.

Conclusion

Tehran's Plan A to get the bomb in the late 1990s and early 2000s—its so-called AMAD Plan—was a crash program launched apparently in the belief that it would not get caught. It did, however, and was consequently subjected to intense pressure, so Iran then adopted its Plan B: a hedging strategy that would enable it to incrementally move forward with the production of fissile material, while managing risk and preserving a nuclear weapons option.

Twenty years later, Tehran knows much more about its vulnerability to foreign intelligence penetration and about the potential risks and costs of proliferation. Yet it is unclear whether Iran's leaders see its hedging strategy as something that they can live with indefinitely, or a temporary detour pending a return to some variant of Plan A, by way of a slow-motion breakout, "sneak-out," or "sprint to the bomb."¹

The matter is probably not settled; some Iranian policymakers may believe that there are sound reasons to keep hedging, while others may believe there are good reasons to get the bomb. The challenge for U.S. policymakers is to ensure that the risks and costs of proliferation, as well as possible doubts about the utility of nuclear weapons, make the case for hedging (if not reversal or rollback) as compelling as possible. U.S. policy should aim to make what may have been a temporary decision by Iran's leadership—the adoption of a hedging strategy—as permanent as anything can be in politics, and to give Iranian decisionmakers as many reasons as possible to repeatedly "kick the (nuclear) can down the road."

Tehran's willingness to do so will likely depend in large part on its assessment of the likelihood and risk of again getting caught. Timely, accurate intelligence helped expose Iran's clandestine nuclear efforts in the 2000s, causing it to eventually adopt a hedging strategy. Timely, accurate intelligence will likewise be critical to future efforts to dissuade or deter Tehran from continuing its fissile material buildup, attempting a breakout, or building a bomb.

To this end, Washington should use all available levers of national power—diplomatic, informational, military, economic, and cyber—to shape as many of

the factors influencing Iran's proliferation calculus as possible. This shaping strategy should play on or foster concerns among Iranian decisionmakers about:

- Iran becoming an isolated, pariah state—preventing it from reshaping the international system in accordance with its interests
- The destabilizing potential of harsh sanctions—especially if combined with efforts to foment unrest in the Islamic Republic through a campaign of sabotage and subversion
- America's unpredictability and the possibility it will ultimately prove willing to use force to thwart Iran's nuclear ambitions
- The destruction that would be inflicted by an Israeli or U.S. preventive strike against Iran's nuclear program, which could morph into a broader campaign against military, economic, and leadership targets
- The vulnerability of nuclear weapons to sabotage and cyberattacks, turning a nascent nuclear arsenal into a double-edged sword that could be used against Iran
- The destabilizing impact of the deployment of both conventional- and nuclear-armed missiles, which could undermine the utility of Iran's conventional missile force and increase the potential for miscalculation in a crisis or war
- Iran's acute vulnerability to even a limited nuclear strike due to the political, economic, and military centrality of Tehran, resulting in an unprecedented national disaster
- The limited military utility of nuclear weapons for regime protection and power projection
- The potential for a regional proliferation cascade that could pose an existential threat to Iran

Some shaping activities—such as influence operations to heighten Tehran's concerns about the risks, costs, and uncertain benefits of nuclear weapons—should be persistent and ongoing. Others should lay the foundation for actions—diplomatic isolation, the enforcement of harsh sanctions, a campaign of sabotage and subversion, and, as a last resort, military action—that would be implemented only if Iran crossed U.S. red lines. These activities would hopefully cause Iranian policymakers to question the wisdom of proliferating—buying time for the United States to develop additional sources of leverage over Tehran, and to shape the regional environment in ways that may help dissuade the Islamic Republic from going down this path.

Such a shaping strategy will be necessary whether or not the United States and Iran return to mutual compliance with the JCPOA. This is because the JCPOA does not solve the challenge posed by Iran's nuclear program—at best, it “kicks the can down the road” and simply defers a crisis until: (1) the deal's most important limits are lifted, allowing Iran to dramatically increase enrichment capacity (after 2028) and produce unlimited quantities of high-enriched or weapons-grade uranium (after 2031);² (2) the United States once again withdraws from the deal; or (3) Iran violates the deal, diverts fissile material from safeguarded facilities, or attempts to build a bomb.

If the United States and Iran revive the JCPOA, Washington should work with allies and partners to use the time bought to dissuade Iran from proliferating once limits on its nuclear program are lifted.³ Should they fail to restore the JCPOA, some kind of shaping strategy will by default be the U.S. Plan B for constraining Iran's nuclear ambitions.

The overarching goal should be to dissuade or deter Iran from pursuing a nuclear *buildup*, *breakout*, or *bomb*. To this end, Washington should seek broad agreement with allies and partners regarding nuclear red lines whose crossing would prompt unprecedented pressure on Iran (including the possibility of military action) in order to prevent the:

- Stockpiling of high-enriched uranium (a red line that has already been crossed) or the production of weapons-grade fissile material—providing a latent nuclear deterrent
- Diversion of high-enriched or weapons-grade uranium to unsafeguarded hide sites or clandestine enrichment or weaponization facilities—providing a “bombproof” breakout capability
- Research, development, or production of nuclear weapons components and their assembly into a bomb—providing a weaponized nuclear deterrent

These red lines should be quietly conveyed to Tehran, though a successful shaping strategy would hopefully obviate the need to enforce them.⁴

The United States, however, faces a double dilemma. Iran is already producing high-enriched uranium (both 20% and 60% enriched), which—because of the nonlinear nature of the enrichment process—already incorporates 90% and 95%, respectively, of the effort needed to get to weapons grade.⁵ This would leave the United States or its allies with precious little time to respond should Iran take the additional step of producing weapons-grade uranium (93% enriched), which it could do very quickly with its advanced centrifuges. The first priority, then, is to pressure Tehran to halt—and, if possible, reverse—its ongoing buildup of high-enriched uranium, using all means available short of military force.

Furthermore, the NPT permits the accumulation of unlimited quantities of weapons-grade fissile material as long as it remains under safeguards—effectively allowing member states to create a latent nuclear deterrent.⁶ Iran has already provided a pretext for producing at this level: it has repeatedly claimed that it plans to produce nuclear-powered warships, including submarines, which would run on uranium enriched to 93%.⁷ The second priority, then, is to make clear to Tehran that the United States will use all means available, including military force, to prevent the production of weapons-grade fissile material.

From the narrow perspective of nonproliferation law, the United States may lack a firm legal basis for threatening force in such a case—as long as Tehran is in compliance with its safeguard agreements and the NPT. But Washington *can* argue that the production of weapons-grade fissile material by Tehran poses a threat to international peace and security that justifies such a step, because the Islamic Republic:

- Is an NPT state party that had a clandestine nuclear weapons program and which may still harbor nuclear ambitions
- Has refused to answer questions regarding past possible military dimensions of its nuclear program and about uranium traces found at three unsafeguarded sites—raising questions about whether it is in compliance with its safeguard agreements and the NPT
- Has engaged in numerous violations of international law—including hostage-taking, embassy invasions, assassinations, cyberattacks on civilian infrastructure, terrorism, and attacks on oil infrastructure and shipping
- Continues to transfer arms to actors in Lebanon, Syria, Iraq, and Yemen in violation of UN Security

Conclusion

Council Resolution 2231—the resolution that lends legal force to the JCPOA

- Is providing critical military support for Russia’s invasion of Ukraine in violation of UNSCR 2231⁸

The alternative is to acquiesce to Iran’s buildup of potentially massive stockpiles of high-enriched uranium that could serve as a latent deterrent, spur a regional proliferation cascade, and provide the basis for a sizable nuclear arsenal.

Time may be short. Some of the factors that led Iran to hedge in the past may no longer prove compelling. And the growing influence of hardliners in Tehran may tip the internal balance toward active proliferation in the final phase of Supreme Leader Khamenei’s career, or after his passing. These hardliners may believe that:

- An aggrieved and resentful Russia and China would shield Iran from U.S. efforts to isolate it.
- Iran’s “resistance economy” could weather U.S. sanctions—perhaps with help from China.⁹
- The regime’s security forces could successfully deal with any future unrest or foreign-inspired “soft warfare.”¹⁰
- Israel and the United States lack the stomach for a preventive strike that could provoke a harsh response.
- Many Iranians would support an attempt to build a bomb—though hardliners are generally not attentive to public opinion.¹¹

Some of these hardliners may also believe that military necessity, Iran’s dignity and honor, and the need for reciprocity in interactions with Israel and the United States make the acquisition of nuclear weapons a moral, political, and national security imperative.¹² For this reason, it is more important than ever before to understand what policy differences may exist among Iran’s dominant hardline factions when it comes to the country’s nuclear ambitions, and how they might affect its nuclear decisionmaking.

Tehran, then, may be approaching a nuclear inflection point. On the one hand, the Supreme Leader’s traditional caution and aversion to risk, the success of Iran’s hedging strategy, and its formidable and growing conventional missile and drone arsenal (which may render nuclear weapons unnecessary—at least for now) might cause Tehran to double down on its hedging strategy. Moreover, Khamenei may not want to saddle a successor with a nuclear crisis at the outset of his tenure, so that he can focus on consolidating his rule. He may likewise believe that sanctions relief might help Tehran better manage the unrest now roiling the country. These considerations point to a possible return to the JCPOA.

Yet, because a Republican victory in the 2024 elections would likely herald a return to “maximum pressure,”¹³ Khamenei might conclude that it is better for Tehran to face such a possibility with many bombs’ worth of uranium in hand to maximize its leverage. This points to a possible strategy of continued hedging outside the JCPOA.

On the other hand, the Supreme Leader’s desire to seal his legacy, Iran’s strong and increasingly assertive military posture, its dramatic nuclear advances, and the world’s focus on Ukraine may make an active return to proliferation too tempting to pass up. The Supreme Leader may also believe that a protracted nuclear crisis might help rally support for his successor—just as the Iran-Iraq War helped the nascent Islamic Republic consolidate power in the early 1980s. These considerations point to a possible attempt to build a bomb.

Washington should therefore be prepared for the possibility that Tehran may rethink its hedging strategy and revert to active proliferation. Iran might attempt a slow-motion breakout in plain sight (if it is not doing so already), or resume the clandestine pursuit of nuclear weapons. Or, more likely, it may seek to advance to the next rung of the proliferation ladder—moving incrementally toward the production of weapons grade uranium or resuming secret weapons work. This further underscores the urgent need for an American shaping strategy to influence the Islamic Republic’s proliferation calculus and “keep the hedger hedging,”¹⁴ lest inaction contribute to the very outcome it has been working for decades to avoid.

Notes

1. These terms correspond, respectively, to the creep-out, sneak-out, and breakout scenarios described in Gary Samore, *How Close Is Iran to the Bomb? The Limits of Nuclear Breakout* (Crown Center for Middle East Studies, August 2022), <https://www.brandeis.edu/crown/publications/middle-east-briefs/index.html>.
2. David Albright, Sarah Burkhard, and Spencer Faragasso, "The Nuclear Deal in Charts, Assuming a Revived Nuclear Deal," Institute for Science and International Security, October 20, 2022, <https://isis-online.org/isis-reports/detail/the-nuclear-deal-in-charts-assuming-a-revived-nuclear-deal>.
3. A more carefully crafted nonproliferation strategy would have made 20% enrichment (which is 90% of the way to weapons grade) a U.S. red line, as this would have provided Washington with a much larger cushion. One benefit of returning to the JCPOA, then, is that it would allow for a "reset," enabling the United States and its allies to rigorously enforce a red line at 20% enrichment in the future.
4. These proposed red lines are more expansive than current and past U.S. nuclear red lines toward Iran, which have focused narrowly on preventing Iran from acquiring a bomb. The topic of red lines is a fraught one in Washington; policymakers generally seek to avoid commitments in order to preserve options, and the United States and Israel have often stepped back from past red lines they set regarding Iran's nuclear program. Moreover, President Barack Obama's renegeing on U.S. red lines vis-à-vis Syria's chemical weapons program in 2013 has given red lines a bad name. But they can be useful policy tools if they are carefully crafted, policymakers are committed to them, and they enjoy significant bipartisan support and broad public approval. They may, however, be difficult to operationalize, especially against adversaries like Iran that are adept at using incrementalism and ambiguity to erode or circumvent them. For an excellent treatment of this topic, see Shashank Joshi and Hugh Chalmers, *Iran: Red Lines and Grey Areas*, Royal United Services Institute Briefing Paper, April 2013. See also Graham Allison, "Red Lines in the Sand: Israel's Credibility Problem on Iran," *Foreign Policy*, October 11, 2012, <https://foreignpolicy.com/2012/10/11/red-lines-in-the-sand/>.
5. William J. Broad, "For Iran, Enriching Uranium Only Gets Easier," *New York Times*, March 8, 2010, <https://www.nytimes.com/2010/03/09/science/09enrich.html>.
6. This is one of a number of shortcomings of the NPT. For more on ambiguities, loopholes, and gaps in the treaty, see Leonard Weiss, "The Nuclear Nonproliferation Treaty: Strengths and Gaps," in *Fighting Proliferation: New Concerns for the Nineties*, ed. Henry Sokolski (Maxwell Air Force Base, AL: Air University Press, 1996), 31–55. See also David S. Jonas, "Ambiguity Defines the NPT: What Does 'Manufacture' Mean?" *Loyola of Los Angeles International Comparative Law Review* 36, no. 2 (2014): 263–80, <https://digitalcommons.lmu.edu/ilr/vol36/iss2/3/>.
7. "Iran Mulls Over Producing Nuclear-Powered Submarines: Navy Chief," PressTV, April 16, 2020, <https://www.presstv.ir/Detail/2020/04/16/623153/Iran-Hossein-Khanzadi-Navy-nuclear-submarine>; Bozorgmehr Sharafedin and Shadia Nasralla, "Iran to Work on Nuclear-Powered Vessels After U.S. 'Violation' of Deal," Reuters, December 13, 2016, <https://www.reuters.com/article/us-usa-iran-nuclear-deals/iran-to-work-on-nuclear-powered-vessels-after-u-s-violation-of-deal-idUSKBN14212X>; Zahra Hosseinian, "Iran Plans Nuclear-Powered Submarine: Report," Reuters, June 12, 2012, <https://www.reuters.com/article/us-iran-nuclear-submarine/iran-plans-nuclear-powered-submarine-report-idUSBRE85B17Q20120612>.
8. The United States, Britain, and France claim that paragraph 4, Annex B of UNSCR 2231 prohibits the transfer of delivery systems that fall under Missile Technology Control Regime restrictions (as set forth in S/2015/546), which reportedly includes drones of the type transferred to Russia. At any rate, UNSCR 2231 requires Security Council approval for such transfers, which were not obtained in this case. U.S. Department of State, "On Russia's Acquisition of UAVs from Iran," press statement, October 19, 2022, <https://www.state.gov/on-russias-acquisition-of-uavs-from-iran/>.
9. Patrick Clawson, "Iran's Next Budget Assumes No Nuclear Deal," PolicyWatch 3558, Washington Institute for Near East Policy, December 14, 2021, <https://www.washingtoninstitute.org/policy-analysis/irans-next-budget-assumes-no-nuclear-deal>.
10. Saeid Golkar, *The Evolution of Iran's Police Forces and Social Control in the Islamic Republic*, Middle East Brief 120 (Waltham, MA: Crown Center for Middle East Studies, 2018), <https://www.brandeis.edu/crown/publications/middle-east-briefs/pdfs/101-200/meb120.pdf>; and Saeid Golkar, *Taking Back the Neighborhood: The IRGC Provincial Guard's Mission to Re-Islamize Iran*, Policy Note 81 (Washington DC: Washington Institute, 2020), <https://www.washingtoninstitute.org/policy-analysis/taking-back-neighborhood-irgc-provincial-guards-mission-re-islamize-iran>.
11. Maysam Behraves, "Iran Is Starting to Want the Bomb," *Foreign Policy*, March 10, 2021, <https://foreignpolicy.com/2021/03/10/iran-is-starting-to-want-the-bomb/>. There is a lack of reliable longitudinal polling on whether people in Iran increasingly favor acquiring nuclear weapons, so such claims should be taken with a grain of salt. Regarding the "nuclear supporters" and their lack of regard for public opinion, see Nima Gerami, *Leadership Divided? The Domestic Politics of Iran's Nuclear Debate*, Policy Focus 134 (Washington DC: Washington Institute, 2014), 21, <https://www.washingtoninstitute.org/policy-analysis/leadership-divided-domestic-politics-irans-nuclear-debate>.
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