The Offensive Realist Logic of Iran's Nuclear Program: Power Maximization and the Pursuit of Regional Hegemony (1950-2025)

İran'ın Nükleer Programının Saldırgan Realizm Mantığı: Güç Maksimizasyonu ve Bölgesel Hegemonya Peşinde Koşma (1950–2025)

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Abstract

This study analyzes Iran's nuclear program (1950–2025) through the lens of offensive realism, arguing that Tehran's nuclear ambitions are a rational expression of its pursuit of regional hegemony and power maximization. The central research question is how Iran's nuclear program, under the conditions of international anarchy, reflects the power maximization principles of offensive realism. The failure of liberal institutional mechanisms such as the Non-Proliferation Treaty (NPT), the International Atomic Energy Agency (IAEA), and the Joint Comprehensive Plan of Action (JCPOA) to limit Iran's nuclear capabilities is explained through security dilemmas arising from the anarchic nature of the international system. Employing a qualitative historical-analytical method, the study finds that Iran has adopted a nuclear hedging strategy in response to sanctions and military threats. Key findings demonstrate that Iran's 60% uranium enrichment and obstruction of safeguards inspections exemplify offensive realism's logic of "relative gains." The study concludes that nonproliferation efforts will remain ineffective unless structural sources of insecurity are addressed.

Keywords: Offensive Realism, Iran Nuclear Program, Regional Hegemony, Power Maximization, IAEA, NPT, JCPOA.

Öz

Bu çalışma, İran'ın nükleer programını (1950-2025) saldırgan realizm kuramı çerçevesinde analiz ederek, Tahran'ın nükleer hedeflerinin, bölgesel hegemonya arayışı ve güç maksimizasyonu stratejisinin rasyonel bir yansıması olduğunu savunmaktadır. Araştırmanın temel sorusu, uluslararası anarşi koşullarında İran'ın nükleer programının, saldırgan realizmin güç maksimizasyonu ilkelerini nasıl yansıttığıdır. Nükleer Silahların Yayılmasını Önleme Anlaşması (NPT), Uluslararası Atom Enerjisi Ajansı (IAEA) ve Kapsamlı Ortak Eylem Planı (JCPOA) gibi liberal kurumsal mekanizmaların İran'ın nükleer kabiliyetlerini sınırlamadaki başarısızlığı, uluslararası sistemin anarşik doğasından kaynaklanan güvenlik ikilemleriyle açıklanmaktadır. Nitel tarihsel-analitik yöntemle yürütülen çalışma, İran'ın yaptırımlar ve askeri tehditler karşısında nükleer belirsizlik stratejisi benimsediğini ortaya koymaktadır. Bulgular, İran'ın %60 oranında zenginleştirilmiş uranyum üretimi ve denetim süreçlerine getirdiği sınırlamaların, saldırgan realizmin "göreceli kazanç" mantığını somutlaştırdığını göstermektedir. Çalışma, yapısal güvensizlik dinamikleri ele alınmadıkça nükleer silahlanma risklerinin devam edeceği sonucuna ulaşmaktadır.

Anahtar Kelimeler: Saldırgan Realizm, İran Nükleer Programı, Bölgesel Hegemonya, Güç Maksimizasyonu, IAEA, NPT, JCPOA.

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Introduction

Iran's nuclear program has emerged as one of the most consequential security challenges of the 21st century, representing a critical test case for theories of international relations and nuclear proliferation. This study examines Iran's nuclear trajectory from 1950 to 2025 through the lens of offensive realism, arguing that Tehran's nuclear ambitions constitute a rational, long-term strategy of power maximization aimed at achieving regional hegemony. The program's evolution—from its origins under the Shah to its current status as a threshold nuclear power—reflects the fundamental dynamics of an anarchic international system, where states prioritize survival through relative power accumulation (Mearsheimer, 2001).

The failure of multilateral institutions like the Nuclear Non-Proliferation Treaty (NPT) and the Joint Comprehensive Plan of Action (JCPOA) to constrain Iran's nuclear advancements underscores the limitations of liberal institutionalism in addressing security competitions between revisionist states and status quo powers. Despite extensive diplomatic efforts and economic sanctions, Iran has steadily expanded its nuclear capabilities, amassing significant stockpiles of 60% enriched uranium while systematically obstructing The International Atomic Energy Agency (IAEA) verification (IAEA, 2025a). This persistence suggests that structural factors—rather than ideological commitments or short-term security calculations—are the primary drivers of Iran's nuclear policy.

This study makes three major contributions to the fields of International Relations and nuclear proliferation. First, it offers a pioneering offensive realist analysis of Iran's nuclear program (1950–2025), demonstrating how systemic anarchy drives Tehran's pursuit of regional hegemony through nuclear power maximization, thus extending Mearsheimer's framework to a critical non-great power context. Second, it integrates historical context with recent diplomatic developments, such as the 2025 Muscat negotiations, to reveal the structural shortcomings of liberal institutions like the NPT and JCPOA in curbing the ambitions of revisionist states. Third, it challenges conventional nonproliferation strategies, arguing that Iran's nuclear ambitions reflect a rational response to systemic insecurity, and urges policymakers to focus on addressing the underlying structural drivers rather than relying on institutional solutions. Together, these contributions deepen both theoretical and policy-oriented understanding of nuclear proliferation dynamics in anarchic international systems.

The study is organized as follows: Section 2 establishes the theoretical foundations of offensive realism; Section 3 traces the historical development of Iran's nuclear program; Sections 4-5 analyze U.S. and EU policy responses; Section 6 assesses institutional failures; and Section 7 analyzes Iran's nuclear escalation using offensive realism. Section 8 concludes by framing Iran's actions as power-maximization under anarchy and suggests future research directions.

By synthesizing theoretical rigor with empirical depth, this research illuminates why traditional nonproliferation approaches have faltered and how structural realities continue to shape nuclear politics in the 21st century.

Theoretical Foundations

Offensive realism, a structural theory of international relations, builds on the core tenet of realism: the belief that states operate within an anarchic global system where survival is the principal goal. While it shares foundational assumptions with defensive realism—such as the emphasis on self-help mechanisms and the critical role of power accumulation for security—offensive realism diverges by asserting that states, driven by the structure of international anarchy, are compelled to maximize their relative power. This drive for power often extends beyond mere survival, encouraging expansion whenever the potential benefits outweigh the costs (Mearsheimer, 2001: 21).

John J. Mearsheimer's (2001) offensive realism presents a structural theory of international relations that explains great powers' inherent drive for power maximization and hegemony. The theory rests on five fundamental assumptions about the international system. First, the system is anarchic—not in the sense of chaos, but as an ordering principle where sovereign states operate without a central governing authority. Second, all states possess some offensive military capability, making them potential threats to one another. Third, states can never be certain about others' intentions, creating an inescapable security dilemma. Fourth, survival constitutes states' primary objective, as territorial integrity and political autonomy are prerequisites for pursuing other goals. Fifth, great powers are rational actors that strategically assess their environment to ensure long-term security (Mearsheimer, 2001: 30-31).

While none of these assumptions alone necessitates aggressive behavior, (Mearsheimer, 2001: 31) their combined effect generates systemic pressures that incentivize power maximization. Unlike defensive realism, which posits that states primarily seek to maintain the status quo, offensive realism contends that the anarchic system rewards expansionist behavior when opportunities arise (Mearsheimer, 2001: 22). Consequently, great powers are inherently revisionist, continuously seeking to alter power distributions in their favor. This structural logic produces three key behavioral patterns: fear stemming from uncertainty, self-help necessitated by anarchy, and power maximization as the optimal survival strategy. Mearsheimer (2001) emphasizes that these assumptions must reflect reality to generate valid explanations. Ultimately, offensive realism provides a framework for understanding why hegemony—rather than mere survival—emerges as the rational terminal goal under systemic anarchy (Mearsheimer, 2001: 29-32).

The expansionist behavior of great powers should be understood not as irrational adventurism but as a rational response to systemic pressures within the international order. As Mearsheimer notes, "great powers seek to increase their share of world power" and are often "willing to use force to achieve that goal" (Mearsheimer, 2001: 209-210). Contrary to defensive realist claims that expansion is invariably self-defeating, "conquest sometimes yields significant strategic benefits". The argument that offensive behavior stems solely from "malign domestic politics" is weakened by the fact that states with diverse political systems have pursued offensive strategies (Mearsheimer, 2001: 210). Moreover, equating military defeat with irrational decision-making is methodologically flawed, since "states may lose wars despite making reasonable decisions under uncertainty" (Mearsheimer, 2001: 211). Powerful states are often driven to pursue regional dominance due to the significant security advantages it offers, and they are likely

to follow the example of the United States (U.S.), even though achieving hegemony remains a challenging goal. Mearsheimer emphasizes that the appeal of regional hegemony lies in its strategic benefits, which consistently motivate great powers to strive for such influence despite the obstacles involved (Mearsheimer, 2001, p. 213). Therefore, evaluating the rationality of an expansionist policy should center on the circumstances and reasoning behind the decision to go to war, rather than simply judging by its outcome. Ultimately, such expansionist actions typically represent deliberate choices made by states operating in an anarchic international system, not reckless miscalculations (Mearsheimer, 2001: 209-213).

Mearsheimer's offensive realism asserts that great powers seek nuclear superiority rather than accepting the equilibrium of "Mutually Assured Destruction" (MAD) (Mearsheimer, 2001: 224). The Cold War provides strong empirical support for this claim. In the 1950s, the U.S. pursued a "splendid first-strike" capability, aiming to eliminate Soviet nuclear forces in a single, decisive attack. By 1983, the SIOP-6 plan included striking 50,000 targets, while advancements such as Multiple Independently Targetable Reentry Vehicle (MIRV) technology significantly enhanced U.S. counterforce capabilities (Mearsheimer, 2001: 225–228).

The Soviet Union followed a parallel path, increasing its strategic warhead count from 354 in 1960 to 11,320 by 1989. It focused on "massive counterforce strikes" aimed at military-industrial infrastructure rather than civilian targets. Despite the logic of MAD, both superpowers invested in missile defense systems and developed strategies like "limited nuclear options" to gain a strategic edge. These efforts reflected rational responses to technological uncertainty and the risk of sudden breakthroughs by the adversary (Mearsheimer, 2001: 231–233). Thus, the nuclear arms race illustrates that, under the conditions of international anarchy, states prioritize power maximization for survival—offering strong validation for Mearsheimer's offensive realism.

Building on this framework, Mearsheimer's (2001) analysis further establishes that nuclear-age great powers must maintain both "a deterrent capable of surviving a nuclear strike" and "formidable conventional forces" to preserve strategic stability. His analysis warns that should any state "achieve nuclear superiority over all its rivals," it would attain unchallenged great-power status, making conventional military balances "largely irrelevant" (Mearsheimer, 2001: 5). This theoretical scenario demonstrates how nuclear hegemony could fundamentally alter international power structures. While these dynamics principally govern great-power relations, regional nuclear powers similarly influence security calculations at their level. Israel's policy of nuclear ambiguity, for example, provides substantial deterrent capability within the Middle East, while a potential Iranian nuclear capability would significantly impact regional - though not global - power dynamics without conferring hegemonic status.

In conclusion, offensive realism offers a compelling structural explanation for the expansionist behavior of great powers. Grounded in the anarchic nature of the international system, Mearsheimer's theory contends that states are rational actors compelled to maximize their relative power to secure survival. This drive is not rooted in aggressive human nature but emerges from systemic incentives that reward power accumulation, often through territorial or strategic expansion. The historical conduct of

powers such as Germany, Japan, and the Soviet Union affirms that expansionist policies reflect calculated efforts to enhance security, not reckless adventurism (Mearsheimer, 2001: 169–209). Moreover, the persistent pursuit of nuclear superiority during the Cold War underscores that even under conditions of strategic deterrence, great powers remain locked in competitive behavior aimed at achieving hegemonic advantage. Ultimately, offensive realism reveals that expansion and power maximization are not anomalies or the result of irrational decision-making but are strategic responses to the enduring constraints of an anarchic international environment. As such, the quest for regional hegemony remains a rational, albeit difficult, goal for powerful states navigating uncertainty and competition.

Historical Evolution of Iran's Nuclear Program

Iran's nuclear program has emerged as a complex manifestation of the nation's pursuit of sovereignty and its evolving relationship with global powers. The program's origins trace back to the 1950s under Shah Mohammad Reza Pahlavi, initiated through the U.S. "Atoms for Peace" program. During this period, Iran pursued nuclear technology with Western support, formalized through a 1957 agreement with the U.S. that established the program's foundation (Vaez & Sadjadpour, 2013: 4). A significant milestone was reached in 1967 with the commissioning of the Tehran Research Reactor (TRR), fueled by 93% enriched uranium supplied by the U.S. (Davenport, 2023). Iran's 1968 accession to the Nuclear Non-Proliferation Treaty (NPT) represented a formal commitment to peaceful nuclear development (France 24, 2015). The Shah envisioned nuclear technology as central to modernization, proposing an ambitious plan for 23 nuclear power plants (Davenport, 2023). He positioned nuclear energy as both a "symbol of industrialization and modernization" and a means to establish Iran as a regional power while meeting energy demands and advancing high-tech industries (Azodi, 2020). However, this ostensibly peaceful narrative became increasingly complicated by strategic ambiguities.

Iran's nuclear expansion during this era remained dependent on Western technology. While the Shah sought full fuel cycle rights and planned reactor purchases from France, West Germany, and the U.S., the Ford and Carter administrations imposed strict conditions to limit plutonium processing capabilities (Walker, 2001, cited in Burr, 2009). U.S. nonproliferation concerns, heightened by India's nuclear test, required Iran to provide assurances of peaceful intentions Vaez & Sadjadpour, 2013: 5). Negotiations between 1974 and 1978 ultimately failed to resolve these tensions, leading to a U.S. ban on nuclear technology sales to Iran. The Shah, rejecting what he perceived as discriminatory treatment, refusing to "treat Iran as a second-class country" and turned to France and West Germany as alternatives, culminating in a 1975 agreement with Germany's Kraftwerk Union for reactor construction (Zakir, 1988, cited in Vaez & Sadjadpour, 2013: 5). By the summer of 1978, the U.S. and Iran reached a nuclear agreement that balanced the Shah's desire for reactors with American nonproliferation concerns, strictly limiting Iran's use of U.S.-supplied nuclear materials. However, the 1979 Islamic Revolution nullified this agreement, cutting off Iran's access to Western nuclear support. (Burr, 2009).

The 1979 Islamic Revolution fundamentally transformed Iran's nuclear trajectory (Burr, 2009). The Shah's overthrow and subsequent U.S. Embassy hostage crisis cemented

Iran's anti-American orientation (Maloney, 2019). While the new revolutionary government initially distanced itself from the Shah's Western-aligned nuclear projects, the Iran-Iraq War (1980-1988) created new strategic imperatives. Iraq's use of chemical weapons, coupled with Western and Arab support for Saddam Hussein's regime, fostered Iranian perceptions of isolation and vulnerability (Ellner, 2011: 9, cited in Advisory Council on International Affairs, 2012: 6), leading Tehran to view nuclear capability as a defensive necessity (Chubin, 2010). This period marked Iran's shift toward nuclear independence from the West, including uranium conversion experiments beginning in 1982 (Azodi, 2020) and acquisition of P-1 centrifuge technology through the A.Q. Khan network (Davenport, 2023). Western intelligence agencies viewed these developments with suspicion, with 1984 CIA assessments controversially suggesting Iran was nearing nuclear weapons capability (Azodi, 2020). The 2002 revelations of clandestine facilities at Natanz and Arak confirmed suspicions of covert nuclear advancement (Regencia and Chughtai, 2018). While a 2007 U.S. intelligence estimate concluded Iran had halted its weapons program in 2003, Tehran's 2006 announcement of uranium enrichment maintained international concerns (Davenport, 2023).

Year	Iran's Actions	International Responses
1957	U.S.-Iran "Atoms for Peace"	
1967	Tehran Research Reactor operational	(U.S. supplies 93% enriched uranium)
1968	Joins NPT	
1979	Islamic Revolution halts program	(U.S. relations severed)
1982	Resumes uranium conversion	
2002	Natanz/Arak exposed	IAEA investigation triggered
2003	E3 talks begin	The IAEA identified gaps in Iran's nuclear declarations
2005	Resumes conversion at Isfahan	
2006	Continues enrichment	UNSC Resolution 1737 sanctions

Table 1: Evolution of Iran's Nuclear Program and International Responses (1957–2006)[1]

In June 2003, IAEA Director General Mohamed ElBaradei noted Iran's failure to fully disclose the scope of its nuclear activities. That year, Iran agreed to halt enriched uranium production and sign the NPT Additional Protocol, laying the groundwork for diplomatic negotiations amid heightened international suspicion (EBSCO, 2024). Despite this, Iran's nuclear program continued to advance, fueling concerns over transparency. After its covert activities were exposed in 2003, Iran signed the Additional Protocol, committing to broader IAEA access, and initiated talks with the EU. However, on August 8, 2005, Iran announced the resumption of uranium conversion at Isfahan. By early 2006, IAEA inspectors confirmed Iran had restarted its enrichment program, further deepening global doubts about the peaceful nature of its nuclear intentions (Bruno, 2010).

International concerns about Iran's nuclear program date back decades, yet "the UN imposed its first sanctions on Tehran only in 2006." These measures followed the IAEA's formal declaration that Iran had failed to meet its obligations as a signatory to the 1970

[1] Table 1 illustrates the key events in the development of Iran's nuclear program and the corresponding international responses over the period from 1957 to 2006.

NPT. Thus, apprehensions over Iran's nuclear activities escalated over time, culminating in concrete sanctions (Westra, 2017).

U.S.-Iran Relations & Sanctions

Iran's first democratic government, formed in 1951 under Prime Minister Mohammad Mossadegh, faced Western-backed economic sanctions and a 1953 coup d'état—orchestrated by the CIA and British intelligence—after nationalizing the oil industry (Özalp, 2018). The coup reinstated the Shah as a key Western ally but entrenched anti-American resentment. This hostility intensified when the U.S. granted the Shah asylum after the revolution (Samuel, 2013), culminating in the November 4, 1979 seizure of the U.S. Embassy in Tehran by revolutionary students. During the 444-day hostage crisis, 66 Americans, including CIA officers William Daugherty and Tom Ahern, were detained. Daugherty endured psychological torture after his identity was revealed, while Ahern faced prolonged isolation and interrogation (CIA, 2014). The crisis irrevocably severed diplomatic ties, galvanized U.S. public outrage, and institutionalized mutual antagonism. In Iran, it solidified a narrative of U.S. imperialism and distrust (Samuel, 2013). Although Iran retained limited economic ties with Europe, its international isolation deepened, exacerbating subsequent tensions (Abrahamian, 1982, cited in Jalilvand, 2019: 123).

The hostage crisis accelerated U.S. economic pressure. In 1984, following the bombing of the U.S. Marine barracks in Lebanon, Washington imposed its first post-revolution sanctions to Iran (Sherman, 2018). During the Iran-Iraq War (1980–1988), Western and Arab support for Saddam Hussein's regime—including tacit approval of Iraq's chemical weapons use—amplified Iran's security anxieties, driving its pursuit of nuclear capability as a deterrent (Chubin, 2010).

In the 1990s, despite its public rhetoric favoring engagement, the Clinton administration (1993-2001) implemented 'dual containment,' banning U.S. oil investments in Iran. This contradictory approach - combining diplomatic overtures with economic pressure - was intensified by the Bush administration through sanctions on foreign firms aiding Iran's nuclear program. (Sherman, 2018). Yet, these measures failed to curb Iran's nuclear ambitions. Successive Iranian governments, irrespective of ideological orientation, consistently treated nuclear technology as a pillar of national security, sustaining the program despite international pressure (McGlinchey & Choksy, 2012; Byrne & Burr, 2015)

The 2002 revelation of clandestine nuclear facilities at Natanz and Arak heightened concerns about Iran's nuclear program, prompting the IAEA to launch inspections. In 2003, the IAEA documented deficiencies in Iran's nuclear material declarations (International Atomic Energy Agency, 2017), while concurrently, the U.S. accused Iran of pursuing weapons of mass destruction. In June 2003, IAEA Director Mohamed ElBaradei criticized Iran's lack of transparency, leading Iran to suspend enriched uranium production and sign the NPT Additional Protocol. These developments fueled international suspicion and laid the groundwork for diplomatic negotiations (EBSCO, 2024). However, by 2005, Iran's non-compliance intensified global pressure, culminating in the imposition of initial sanctions (IAEA, 2017).

On August 8, 2005, Iran announced the resumption of uranium conversion at Isfahan, followed by IAEA confirmation of renewed enrichment activities in early 2006. These actions deepened international doubts about the peaceful nature of Iran's nuclear program (Bruno, 2010). Consequently, on December 23, 2006, the United Nations Security Council (UNSC) unanimously adopted Resolution 1737, imposing sanctions due to Iran's refusal to halt uranium enrichment and reprocessing. The resolution mandated asset freezes for individuals and entities linked to Iran's proliferation activities and restricted trade in sensitive nuclear materials and equipment. It stipulated that sanctions would be lifted upon Iran's cessation of these activities, tasked the IAEA with reporting compliance within 60 days, and established a committee of all Council members to oversee implementation and address violations (Department of Public Information, 2006). Throughout this period, Iran's determination to sustain its nuclear program persisted, amid ongoing international demands for transparency and rising security concerns.

Year	U.S.-Iran Event	Nuclear Development	Outcome
1979	Hostage crisis begins	Program halted by Revolution	Diplomatic ties severed
2002	U.S. labels Iran threat	Natanz/Arak exposed	IAEA inspections begin
2006	UNSC Resolution 1737	Enrichment resumes (Isfahan)	Sanctions imposed

Table 2: Key Milestones in U.S.-Iran Tensions and Nuclear Developments (1979–2006)

Key developments in U.S.-Iran relations and nuclear activities are summarized in Table 2, illustrating the progression from the 1979 Hostage Crisis to UNSC Resolution 1737 in 2006.

This trajectory underscores how the U.S.-Iran conflict, rooted in the 1979 Islamic Revolution's diplomatic rupture and exacerbated by the hostage crisis, evolved through economic sanctions and nuclear disputes. Iran's nuclear program, consistent across the Shah and Islamic Republic eras, reflects enduring national security and deterrence objectives. Rather than thwarting these goals, U.S. pressure reinforced Iran's pursuit of an independent path, perpetuating mutual distrust and tension that continue to shape regional and global security dynamics.

EU Diplomacy & JCPOA

The EU has played a pivotal role in shaping diplomatic efforts around Iran's nuclear program, particularly through its mediation in the JCPOA. Balancing normative values, strategic interests, and transatlantic relations, the EU's approach reflects its commitment to multilateralism and conflict resolution. This section examines the evolution of EU-Iran relations, key negotiation phases, and the challenges posed by shifting U.S. policies and regional dynamics.

EU-Iran Negotiations: From E3 to JCPOA

Iran's strategic patience, as it sought balance amid international pressures, played a role in the emerging global crisis surrounding its nuclear program by 2003. In response, the EU initiated diplomatic engagement by deploying the European Three (trio) "E3: Germany, France, United Kingdom (UK)" in 2003. The E3 offered economic incentives to suspend Iran's nuclear activities, presenting an alternative to U.S. coercive policies and aiming to establish a constructive dialogue framework (Sauer, 2019: 14-15). This

mediation role, as Bergmann and Niemann note, underscored the EU's capacity to support peace negotiations, addressing international demands to regulate Iran's nuclear program (Bergmann & Niemann, 2013: 2). The E3's efforts highlighted the EU's evolving foreign policy, progressing into the EU3 (EU with France, Germany, UK) and EU3+3 (France, Germany, UK, plus EU, China, Russia, U.S.) frameworks, which accelerated diplomacy, averted potential U.S. military action, and "bought time for the inclusion of more significant diplomatic actors" (Adebahr, 2017: 171-172; Sauer, 2019: 14-15).

Phase	Timeline	Key EU Actions	Key Outcomes	Challenges
E3/EU3 Initial Diplomacy	(2003–2005)	E3 (France, Germany, UK) proposes negotiations with Iran.	Paris Agreement (2004): Iran suspends uranium conversion.	Collapse of Paris Agreement due to U.S. pressure.
Sanctions	(2006–2012)	EU adopts heavy sanctions such as oil embargo, continues diplomatic pressure.	Increased sanctions such as UNSC resolution 1737 but no agreement.	U.S. policy divergence, lack of Iranian compliance.
JCPOA Negotiation	(2012–2015)	EU3+3 framework includes China, Russia, and U.S. for a comprehensive deal.	JCPOA signed in 2015 (IAEA verification); sanctions lifted.	U.S.'s fluctuating position, internal EU disagreements.

Table 3: EU Diplomatic Phases in Iran Nuclear Negotiations (2003–2015)

Table 3 illustrates the three distinct phases of EU diplomacy in Iran's nuclear negotiations, highlighting major actions, milestones, and challenges faced from 2003 to 2015.

The resolution of the Iranian nuclear crisis unfolded in three phases: the E3/EU3 negotiations of two agreements between 2003 and 2005, intensified U.S. and EU economic sanctions from 2006 to 2012, and the EU3+3's conclusion of the JCPOA from 2012 to 2015. The first phase began in October 2003, when the E3 secured an agreement for Iran to suspend uranium enrichment, sign the IAEA Additional Protocol, and receive international support for civilian nuclear energy. Iran signed the protocol but did not ratify it. In 2004, the EU3's Paris Agreement halted Iran's uranium conversion, promising economic benefits and light-water reactors in return (Sauer, 2019: 8-9). However, U.S. adoption of a harder stance led to the agreement's collapse (Lohman, 2016, as cited in Sauer, 2019: 9).

The second phase, spanning from 2006 to 2012, has been shaped by escalating U.S. and EU economic sanctions aimed at curbing Iran's nuclear program, though these measures proved insufficient for a diplomatic resolution. Ultimately, on July 14, 2015, the EU3+3 and Iran finalized the JCPOA, ensuring the peaceful continuation of Iran's nuclear activities. This agreement, the culmination of three years of diplomacy, resolved a crisis spanning over a decade (Sauer, 2019: 1). Following an IAEA report verifying Iran's compliance, the U.S. and EU lifted nuclear-related sanctions (U.S. Department of State, n.d.).

The third phase centered on the JCPOA's implementation, negotiated by the EU3+3. Sauer (2019) attributes the initial EU-Iran agreements' failures largely to the U.S.'s absence (Sauer, 2019: 14). The final agreement required UN Security Council

endorsement to become binding, underscoring the necessity of a formal international structure (Council of the European Union, n.d.) Sauer argues that informal, temporary arrangements prolong decision-making and lack the efficacy of established institutions (Sauer, 2019: 14).

In conclusion, multilateral diplomatic efforts played a pivotal role in curbing nuclear proliferation, reaffirming this approach as a critical global security strategy. Collaboration among the E3, EU3, EU3+3, and the UN proved decisive in resolving the Iranian nuclear crisis. This process highlighted the synergy between the flexibility of ad hoc structures and the binding authority of formal institutions, underscoring multilateral diplomacy's strategic importance in preventing nuclear proliferation while enhancing the EU's diplomatic stature internationally.

Iranian Divisions and Tensions in Transatlantic Politics

In the post-Cold War era, EU policies have complemented U.S. actions, providing a framework aligned with security interests and ethical standards. Conversely, U.S. policy adopted a harder line; on May 8, 2018, President Donald Trump announced the U.S. withdrawal from the JCPOA, imposing new sanctions on Iran, catching the EU unprepared (Landler, 2018). EU High Representative Federica Mogherini, alongside French, German and UK leaders, unsuccessfully sought to retain Trump's commitment, yet the EU upheld the JCPOA while signaling openness to negotiate Iran's missile program and regional policies (Rózsa, 2018: 4).

Iran's regional strategy prioritizes internal stability and expanding influence, revealing stark differences between U.S. and EU approaches. Through its "axis of resistance," Iran supports groups like Hezbollah, Hamas, Yemen's Houthi militia, and Iraq's Popular Mobilization Forces (PMF) to counter U.S. and Israeli regime-change efforts. Despite strains from 2024 Israel conflicts, these groups' integration into state structures sustained their resilience (Mansour, Al-Shakeri, & Haid, 2025). In Syria, Bashar al-Assad, allied with Iran and Hezbollah, avoided war with Israel, prioritizing national security and limiting "axis of resistance" activities. His overthrow on December 8, 2024, marked a strategic loss for Iran, boosting Türkiye and Israel's regional gains (Valensi & Naftali, 2024; Adar and others, 2025). Western efforts to weaken this axis often remained superficial, overlooking regional ties; a more effective strategy requires mapping the axis and engaging intermediaries (Mansour, Al-Shakeri, & Haid, 2025).

Regarding Iran's nuclear program, the EU and U.S. exhibit profound strategic divergences, straining transatlantic relations. Initially, EU states opposed U.S. military intervention in Iran for "legal and practical reasons" (Meier, 2013: 4-5). Conversely, the E3 (France, Germany, UK) launched dialogue with Iran in Tehran on October 20, 2003, securing uranium enrichment suspension and IAEA Additional Protocol adoption, reinforcing the EU's non-proliferation role (Portela, 2003: 17-19).

However, U.S. policies of isolating Iran and its attempts to deter the E3 further exacerbated diplomatic divisions. While the EU's systematic approach initially aligned with U.S. strategies, the uncompromising stance of Iranian President Mahmoud Ahmadinejad (2005–2013) led to mounting frustrations and pushed the EU toward adopting a more assertive position, reinforced by UN Security Council resolutions such as UNSCR 1696 (Meier, 2013, p. 18, Esfandiary, 2013, cited by: Fiedler, 2018: 296–297).

On May 8, 2018, U.S. President Donald Trump described the JCPOA as a "one-sided and flawed" agreement, calling it a "rotten structure" (Landler, 2018), which led to significant disappointment among U.S. allies and trade partners. The EU, in contrast, made efforts to ensure that Iran could still benefit from the provisions of the agreement (Council of the European Union, 2018). In response to the sanctions imposed by Trump on Iran, the EU declared that it would impose sanctions on companies that ceased doing business with Iran (Bruton, Eckardt, & Angerer, 2018). Trump's implementation of the "harshest sanctions" put the EU in a difficult economic and diplomatic position (Trump, 2018). Although the EU sought to preserve its autonomy by warning that "companies complying with U.S. sanctions would be penalized," Trump's threat to companies doing business with Iran, stating that "you cannot do business with the U.S.," led to businesses distancing themselves from the region (Czulda, 2018). The EU's policy toward Iran during the 2003-2022 period was largely shaped by the developments in the nuclear dispute, which determined the primary agenda of EU-Iran relations. Relations, which peaked with the signing of the JCPOA in 2015, were subsequently constrained by the U.S.'s unilateral withdrawal from the agreement in 2018, thereby limiting the EU's influence (Alcaro, 2023: 16-18).

In conclusion, the Iran nuclear crisis has highlighted the tension between the EU's normative diplomatic approach and the U.S.'s stringent isolationist policies; while the EU has contributed to preventing conflict, its effectiveness has been undermined by a lack of internal coherence and leadership (Meier, 2013: 3).

The Revival and Evolution of JCPOA Negotiations (2021–2025)

Initially revived in Vienna between 2021 and 2022, the JCPOA negotiations represented a renewed international effort to contain Iran's nuclear program through diplomatic means. These discussions gradually evolved into the 2025 initiative, often referred to as 'JCPOA 2,' reflecting both shifting geopolitical dynamics and aspirations for a more enduring agreement.

The negotiations for the JCPOA were restarted in Vienna in November 2021. According to EU official Enrique Mora, these negotiations created a solid foundation for progress between the parties (France 24, 2021). Iranian Foreign Minister Hossein Amirabdollahian found the talks to be positive and emphasized the need for increased technical cooperation with the IAEA (Amirabdollahian, 2021). However, European diplomats stated that Iran's "maximalist" demands set back previous agreements and made the negotiations more difficult (Motamedi, 2021). While the E3 countries stressed their openness to discussing all aspects of the negotiations (Amirabdollahian, 2021), U.S. Secretary of State Antony Blinken indicated that Iran had not shown a serious willingness to resolve the issue, and IAEA Director General Rafael Grossi warned that if full access to inspections was not granted, the problems would escalate (Motamedi, 2021). Senior European diplomats cautioned that "without rapid progress, the JCPOA could soon become an empty shell" (Norman, 2021a), noting that despite a principled agreement on the nuclear agenda, gaps remained that needed to be closed for a solution (Rozen, 2021). As a result, despite some technical progress during the seventh round of talks, a sustainable agreement could not be reached due to Iran's stance (France 24, 2021).

The eighth round of Vienna talks, held between December 2021 and January 2022, marked a critical phase in the future of the JCPOA. As emphasized by EU official Enrique Mora, "there is not much time left" and "difficult political decisions need to be made" (Liechtenstein, 2021, December 27), which aligned with European diplomats' warnings that Iran's nuclear escalation threatened the essence of the agreement (Arms Control Association, 2023). The U.S. State Department's emphasis on the "real urgency" (Liechtenstein, 2021, December 30) and French Foreign Minister Le Drian's criticism of the "slow progress" (Arms Control Association, 2023) reflected the fundamental tensions between the parties. While Iran's Supreme Leader Khamenei's tacit approval (Amwaj Media, 2022) and U.S. President Biden's statement, "now is not the time to back down" (Liechtenstein, 2022, January 20), were seen as signs of hope, the geopolitical tensions caused by the Russia-Ukraine war (Crisis Group, 2022) and the mutual distrust between the parties cast uncertainty over the future of the agreement.

The JCPOA negotiations made significant progress in January and February 2022 but faced serious obstacles. E3 negotiators described January as the "most intense period," noting that the process was nearing its final stages and political decisions were required (Reuters, 2022, January 28). Iran argued that conditions for a "win-win" agreement with the U.S. were favorable, while demanding guarantees for the lifting of sanctions (Al-Monitor, 2022, February 28; Reuters, 2022, February 5) On February 4, the Biden administration incentivized a return to the agreement by offering some sanctions relief, but Iran deemed it "insufficient" (Lee, 2022; AP News, 2022, February 5). The talks resumed on February 8, but Iran's uranium enrichment activities and the introduction of the "Khaibar-buster" missile on February 9 raised concerns in the West (AP News, 2022, February 9; U.S. Department of State, 2022). Iranian President Raisi stated that trust in the West caused "instability," while Foreign Minister Amirabdollahian accused the West of lacking serious will (Reuters, 2022, February 11; Islamic Republic of Iran Ministry of Foreign Affairs, 2022). France described the process as a "matter of days," but the negotiations ultimately collapsed following the withdrawal of Western countries in 2022, as noted by Russia's representative in Vienna, Mikhail Ulyanov, in January 2025. This development coincided with internal unrest in Iran, further undermining the atmosphere of trust (Reuters, 2022, February 16; Hojat Ansari, 2025).

The nuclear negotiations between Iran and the U.S., which began in April 2025, aim to establish a new agreement while maintaining the core structure of the 2015 JCPOA (Nakhoul, Pamuk, & Hafezi, 2025). The draft agreement envisions limiting Iran's uranium enrichment to 3.67%, reducing its stockpiles, and diluting or exporting uranium enriched to 60% purity. It also plans to tighten IAEA inspections and extend the "termination clauses" to 25 years (Nakhoul, Pamuk, & Hafezi, 2025). While Iran seeks to preserve its right to a peaceful nuclear program, the U.S. and Israel demand "zero enrichment," which Iran rejects. The negotiations do not address Iran's ballistic missile program, which has led to criticism in the U.S. Former negotiator Dennis Ross argues that Iran's nuclear infrastructure should be "permanently reduced," while expert Alex Vatanka suggests Iran must accept long-term termination clauses (Nakhoul, Pamuk, & Hafezi, 2025). Iran is requesting guarantees that the U.S. will not withdraw from the agreement again, while Netanyahu's potential military intervention complicates the

process. These talks aim to strike a delicate balance between limiting Iran's nuclear capabilities and easing sanctions.

As of May 11, 2025, the U.S. and Iran held four rounds of talks within four weeks since the negotiations began in April. The fourth round of Iran-U.S. nuclear talks in Muscat highlighted entrenched red lines, with Iranian negotiator Foreign Minister Abbas Araqchi declaring "no room for compromise on uranium enrichment" and U.S. Middle East envoy Steve Witkoff countering "no enrichment—that means dismantlement" (Hafezi, 2025).

Concurrently, European powers re-engaged with Iran to address the nuclear standoff. Iran and the European E3 nations (France, Germany, UK) held nuclear talks in Istanbul on May 16, aiming to clarify their positions ahead of anticipated U.S.-Iran negotiations. Initially postponed due to European concerns over 'creating a parallel track' in diplomacy, the talks proceeded once deemed strategically necessary. Iran sought to gauge European stances on the potential U.N. sanctions snapback—a mechanism the E3 may trigger by August if no agreement is reached (Irish & Hafezi, 2025). These discussions underscored the fragile balance between diplomacy and escalation in the ongoing nuclear standoff.

The Revival and Breakdown of JCPOA Talks (2021–2025): An Offensive Realist Analysis

When evaluating the JCPOA negotiations from 2021 to 2025 through the lens of Mearsheimer's offensive realism, several key insights emerge. The collapse of the Vienna negotiations in 2022, driven by Iran's insistence on binding guarantees for sanctions relief (Reuters, 2022, February 5; Reuters, 2022, February 16; Al-Monitor, 2022, February 28; Hojat Ansari, 2025), illustrates the limitations of trust in an anarchic international system. As Mearsheimer (2001) contends, in the absence of a central authority to enforce international agreements, states are compelled to rely on self-help and remain fundamentally distrustful of others' intentions. This structural condition of anarchy not only generates persistent fear and suspicion but also obstructs durable cooperation—especially in high-stakes negotiations where issues of national survival and strategic autonomy are at the forefront (Mearsheimer, 2001: 32-33).

Similarly, The JCPOA Vienna Talks (January-February 2022) illustrate the challenge of cooperation in the international system, where both Iran and the West were focused on relative gains. Iran sought guarantees for sanctions relief to ensure it did not lose out compared to the West, while the West was concerned about the balance of power and Iran's nuclear capabilities (Mearsheimer, 2001: 51-52). This focus on relative gains, rather than absolute gains, ultimately contributed to the collapse of the negotiations, as both sides were unwilling to fully trust each other or accept conditions perceived as unfavorable.

The U.S.-Iran negotiations in 2025 further illustrate Mearsheimer's offensive realism, which posits that states are driven to maximize power in an anarchic international system to ensure their security. The fourth round of talks in Muscat, characterized by rigid positions—such as Iran's refusal to compromise on uranium enrichment and the U.S. demand for complete dismantlement—highlights the zero-sum logic of power politics. Each side viewed concessions as a strategic loss rather than a cooperative gain. According to Mearsheimer, great powers compete for power not out of innate aggression but because the international system forces them to (Mearsheimer, 2001: 21).

Iran's insistence on maintaining its enrichment program aligns with its desire to retain deterrence and regional influence, while the U.S. seeks to neutralize this capability to preserve its hegemonic advantage and reassure allies (Mearsheimer, 2001: 2, 24). Both sides prioritize relative gains, focusing more on what the other might gain than on mutually beneficial outcomes. The intensity of their rivalry underscores the systemic incentive to maximize power in relation to other states to ensure survival (Mearsheimer, 2001: 36). Furthermore, the intensity of their rivalry reflects the systemic incentive to "maximize power vis-à-vis other states" to ensure survival (Mearsheimer, 2001: 29).

In sum, the JCPOA negotiations from 2021 to 2025 highlight the central tenet of Mearsheimer's offensive realism: in an anarchic international system, states are driven by competition for power and security, prioritizing relative gains over cooperation. The failure of these negotiations underscores the difficulty of achieving lasting agreements when survival and strategic dominance are at stake, as both Iran and the U.S. view any concession as a threat to their position in the global power structure.

NPT & Institutional Failures

This section examines the limitations of the NPT in addressing Iran's nuclear program, while critically assessing liberal institutionalist assumptions that have underpinned global non-proliferation and security regimes.

The International Security Crisis and the NPT Regime

The discovery of Iran's secret nuclear facilities in 2002 provoked considerable international concern and sparked discussions regarding the country's nuclear intentions. (Chubin, 2010). In response, on December 23, 2006, the UNSC unanimously adopted Resolution 1737, imposing sanctions due to Iran's refusal to suspend uranium enrichment and reprocessing activities. This resolution mandated the freezing of financial assets belonging to individuals and entities involved in nuclear proliferation and prohibited the trade of sensitive nuclear materials and equipment. The sanctions were conditional upon Iran's compliance, with the IAEA tasked with submitting a compliance report within 60 days. Additionally, a committee comprising all UNSC members was established to oversee the implementation of these sanctions and assess any violations (Department of Public Information, 2006). The nuclear negotiations initiated in 2013 under President Hassan Rouhani's leadership (2013–2021) were seen as an effort to balance reformist and hardline factions. Foreign Minister Mohammad Javad Zarif played a pivotal role in the process, while Supreme Leader Ali Khamenei's supportive stance significantly influenced the international implications of Iran's nuclear program. Iran's nuclear program continues to play a pivotal role in shaping its domestic political landscape and international relations, with far-reaching consequences for its future direction (Chubin, 2010).

Prior to 2003, efforts to manage Iran's nuclear activities had a profound impact on both its internal dynamics and global reputation. These measures intensified doubts about the peaceful intent of Iran's program and set the stage for subsequent diplomatic negotiations. Despite growing concerns, Iran continued to advance its nuclear program, prompting decisive actions such as UNSC-imposed sanctions. The NPT, signed in 1968 and enacted in 1970, serves as the "cornerstone" of the global non-proliferation regime, aiming to curb

the spread of nuclear weapons, facilitate peaceful nuclear cooperation, and promote disarmament (United Nations Office for Disarmament Affairs, 2025), The NPT has 191 signatories, including five officially recognized nuclear-armed states (China, France, Russia, the UK., and the U.S.). The treaty obligates nuclear-armed states to pursue disarmament, prevents non-nuclear states from developing nuclear weapons, and ensures access to peaceful nuclear technology. Extended indefinitely in 1995, it is assessed through review conferences every five years (U.S. Nuclear Regulatory Commission [NRC], n.d.). Nonetheless, Iran's nuclear pursuits have cast doubts on the NPT's efficacy (United Nations Office for Disarmament Affairs, 2025).

As an NPT signatory since 1970, Iran's nuclear transparency has been questioned, particularly following the 2002 exposure of undisclosed facilities. This led to increased scrutiny, international sanctions, and ultimately, the JCPOA in 2015 (Polsci Institute, 2024).

IAEA inspections uncovered advanced centrifuges, traces of enriched uranium, and undeclared uranium stockpiles at hidden locations, leading to ongoing U.S.-supported monitoring efforts. The NPT has been instrumental in restricting nuclear proliferation, averting a potential scenario where more than 30 countries might possess nuclear weapons (Bunn, 2003).

The NPT's effectiveness is being seriously challenged, particularly in relation to Iran's nuclear program. Iran asserts its right to enrich uranium under Article IV of the NPT, while the U.S. has rejected this claim. The JCPOA acknowledges this right but imposes strict limits on Iran's nuclear capacity, reflecting a non-proliferation strategy that goes beyond the NPT's framework. This raise concerns that the NPT's outdated provisions may hinder the management of future proliferation risks in similar situations (Biswas, 2016). Iran's nuclear program, marked by "evasion of international inspections and deceptive tactics," poses a significant threat to global security, prompting doubts about the NPT's ability to effectively address disarmament and non-proliferation (Stiles, 2024).

Iran's failure to fulfill its commitments under the NPT has raised serious concerns within the international community. France, Germany, and the UK (E3) support the IAEA Director General's report on Iran's nuclear activities, emphasizing that the IAEA cannot verify the accuracy of Iran's declarations due to the lack of "technically credible explanations" from Iran. The E3 has urged Iran to take "urgent and necessary actions" and to fully cooperate with the IAEA. Otherwise, they warn that the IAEA will be unable to confirm that nuclear materials are not being used for non-peaceful purposes (Kitsell, 2023). Iran's stance poses a significant threat to the future of the nuclear non-proliferation regime.

The IAEA's February 2025 report reveals that Iran has violated its NPT obligations and has failed to provide assurances that its nuclear program is peaceful. Nuclear materials and activities have been detected at secret sites in Varamin, Turquzabad, Lavisan-Shian, and Marivan, but Iran has not provided technical explanations. Iran's suspension of Modified Code 3.1 and the obstruction of IAEA inspectors have constrained the agency's ability to carry out inspections, while non-compliance with the March 2023 Joint Statement highlights deficiencies in transparency. According to the IAEA's February 2025 report, Iran's increase in uranium enrichment activities, reaching up to 60%, raises

serious regional and global security concerns, threatening the sustainability of the NPT regime (IAEA, 2025a).

Data from March 2025 further intensifies these concerns: Iran's stock of 60% enriched uranium has increased from 182 kg to 275 kg in the last quarter, marking four years since the suspension of JCPOA commitments (IAEA, 2025b).

Rising tensions between Iran and Israel, coupled with Iran's nuclear and ballistic missile advancements, have exacerbated global concerns. While Iran does not currently possess nuclear weapons, analysts suggest that its covert research efforts could enable the production of "weapons-grade material within weeks," a clear violation of its NPT commitments. Following the U.S. withdrawal from the JCPOA in 2018, Iran accelerated uranium enrichment while simultaneously restricting IAEA access. In 2024, Iran demonstrated its ballistic missile capabilities by launching long-range strikes on Israel, showcasing a missile range of 2,000 km. A nuclear-armed Iran would pose an "existential threat" to Israel and could trigger a regional arms race, potentially involving states such as Saudi Arabia. Furthermore, Iran's strategic alliances with Russia and China add complexity to regional security dynamics, increasing instability across the Middle East (Masters & Merrow, 2024).

In conclusion, Iran's lack of transparency and its persistent challenges to the NPT's principles raise fundamental questions about the treaty's effectiveness. The country's continued defiance has cast doubt on the credibility of the global non-proliferation framework, with significant implications for regional stability and international security. Given these challenges, strengthening and updating the NPT is imperative to address emerging proliferation threats and reinforce the treaty's role in preventing the spread of nuclear weapons.

Critique of Liberal Institutionalist Assumptions

Liberal institutionalism suggests that international organizations, democratic norms, and cooperation can guide state behavior and foster peace. However, this assumption is flawed when states prioritize their survival within an anarchic international system. Mearsheimer (2001) critiques liberal optimism by arguing that international institutions often reflect the power dynamics of dominant states, rather than acting as impartial arbiters. For example, the EU's integration process, although framed as a cooperative initiative, serves as a strategy for consolidating power to counter external threats—aligning with offensive realism's emphasis on self-help and relative gains (Mearsheimer, 2001: 2).

Mearsheimer (2001) rejects the "end of history" thesis, which posits that democratic transitions (e.g., a potential democratic China) would eliminate hegemonic behaviors. Instead, he argues that such transitions do not mitigate states' inherent tendencies to seek power and dominance (Mearsheimer, 2001: 4). In this view, the EU's efforts at integration, while appearing collaborative, are, in reality, a form of power consolidation aimed at addressing external security challenges, aligning with the realist notion that states are primarily motivated by security concerns (Mearsheimer, 2001: 2).

Liberal theorists argue that international institutions play a key role in fostering cooperation among states and reducing the likelihood of war. However, Mearsheimer

(2001) challenges this view, asserting that institutions lack the independent authority to enforce compliance. He explains that institutions are not supranational entities but are instead negotiated rule sets, with states adhering to them only when doing so aligns with their national interests (Mearsheimer, 2001: 17). Mearsheimer further highlights that, while prominent institutions such as NATO and the EU exist in Europe, they cannot compel member states to act against their strategic interests (Mearsheimer, 2001: 364). In this view, powerful states shape institutions to preserve or enhance their power, often disregarding these institutions when they conflict with their national objectives (Mearsheimer, 2001: 364-365). Ultimately, Mearsheimer argues that international institutions have minimal independent influence on great-power behavior, functioning more as tools of power politics than transformative mechanisms that shape state conduct.

This perspective is evident in the EU's mediation efforts in the 2003–2012 Iran nuclear negotiations, where the limitations of international institutions became apparent. Despite the EU's diplomatic engagement, agreements faltered when they conflicted with the core strategic interests of the key stakeholders. The eventual 2015 JCPOA, which was achieved after significant involvement from both the U.S. and China, further affirms Mearsheimer's argument that international institutions lack the independent enforcement power to ensure compliance when great powers' strategic interests diverge (Mearsheimer, 2001: 364). This failure to compel compliance underscores the limitations of institutions in transforming state behavior when national interests are at stake.

Similarly, the EU's 2022 Vienna Talks 'final text' proposal to revive the JCPOA faced significant challenges due to persistent power asymmetries between the U.S. and Iran. Both states demanded concessions that were fundamentally incompatible, rendering the EU's proposal ineffective. This outcome echoes Mearsheimer's assertion that institutions cannot override the strategic interests of great powers, as both the U.S. and Iran prioritized their national interests over institutional solutions (Mearsheimer, 2001: 364-365). As such, the failure of the 2022 proposal exemplifies how institutions are secondary to the power politics that dominate international relations.

In conclusion, both the 2003–2012 Iran nuclear negotiations and the 2022 Vienna talks validate Mearsheimer's thesis regarding the limited role of international institutions in shaping great-power behavior. These cases demonstrate that while institutions may provide a forum for dialogue, they lack the ability to enforce compliance when the strategic interests of major powers diverge. As a result, power politics remain the primary determinant of international negotiation outcomes.

The Myth of Perpetual Peace and Liberal Optimism

Post-Cold War liberal thought projected the emergence of a "perpetual peace," grounded in the spread of democracy, economic interdependence, and robust institutions. Yet Mearsheimer (2001) refutes this notion, arguing that such factors only produce transient pauses in great-power competition rather than enduring systemic change. The liberal view underestimated the enduring nature of geopolitical rivalry and overestimated the pacifying effects of interdependence (Mearsheimer, 2001: 1). Iran's nuclear challenge exemplifies this flaw, as Western-led institutional efforts failed to deter Iran's pursuit of strategic autonomy and regional influence. The assumption that democratic transitions or

engagement would neutralize hegemonic ambitions proved naive, particularly in the face of Tehran's balancing strategies and security-driven calculus.

An Offensive Realist Interpretation of Iran's Nuclear Escalation

The relationship between geopolitical insecurity and Iran's nuclear escalation from 2003 to 2025 reveals a clear pattern: periods of heightened external pressure, regional conflict, and diplomatic breakdown have consistently triggered Iran's advancement of its nuclear program. As reflected in IAEA reports, from the U.S. "Axis of Evil" designation (2002) and Iraq War (2003) to the JCPOA's collapse (2018) and deepening Russia-Iran ties (2022–2023), each phase of Iran's nuclear advancement—documented in IAEA reports—aligns with heightened insecurity. This analysis will delve into these critical junctures, highlighting how geopolitical dynamics have shaped Iran's nuclear decision-making.

Geopolitical Insecurity and Iran's Pursuit of Power Maximization

Period	Geopolitical Context	Nuclear Response	Key IAEA Report References
2003-2006	U.S. "Axis of Evil" designation (2002) (Washington Post, 2002) The Iraq War, started in 2003, was an armed conflict initiated by a United States-led coalition against the regime of Saddam Hussein (National Archives, n.d.) EU3 diplomatic failures (2005) (Takeyh, n.d.)	- Iran's 18 years of secretly conducted nuclear activities—centrifuge and laser enrichment, plus plutonium separation—were openly documented for the first time (2003/75) - Resumed enrichment (since September 2005, 85 metric tons of UF_6 by 2006/15)	GOV/2003/75 (10 Nov 2003) GOV/2006/15 (27 Feb 2006)
2012-2013	EU foreign ministers imposed an unprecedented oil embargo sanctions on Iran in response to its nuclear program (2012) (BBC News, 2012) Israeli military threats (Judis, 2013) Stuxnet cyberattack (Kushner, 2013)	- 27% enrichment at Fordow (2012/23) - 7,611 kg of UF6 enriched up to 5% U-235 (+735 kg) and 232.8 kg of UF6 enriched up to 20% U-235 (+43.4 kg) (2012/55) - The IAEA highlights ongoing verification gaps in Iran's nuclear program due to non-cooperation, military dimension concerns, and restricted Parchin site access (2013/6)	GOV/2012/23 (25 May 2012) GOV/2012/55 (16 Nov 2012) GOV/2013/6 (21 Feb 2013)
2015-2018	JCPOA implementation sanctions relief (Berger, Dall, Tabrizi, Keatinge, & Stafford, 2016) Diplomatic engagement (EEAS, 2021)	Iran is in compliance with its JCPOA commitments (2016/8, 2018/24) - Complied with 3.67% limit - Stockpile <300kg	GOV/2016/8 (26 Feb 2016) GOV/2018/24 (24 May 2018)
2018-2021	U.S. JCPOA withdrawal (2018, May 8) (The White House, 2018) U.S. "maximum pressure" sanctions (Human Rights Watch, 2019) Iran's Quds Force commander Qasem Soleimani was killed in a U.S. drone strike in Baghdad	- Breached the JCPOA limits: - 4.5% enrichment (2019/9) - 20% enrichment at Fordow (a major JCPOA violation) (2021/2) - 60% enrichment (2021/28)	GOV/INF/2019/9 (8 July 2019) GOV/INF/2021/2 (4 January 2021) GOV//2021/28 (31 May 2021)

	ordered by President Trump. (2020, January 3) (Cohen, Alkhshali, Khadder, & Dewan, 2020).		
2022-2023	The Russia-Iran relationship, strengthened by the Ukraine war, is viewed as a direct threat to the EU and European nations. (Geranmayeh & Grajewski, 2023) Iran supplied Russia with up to 3,000 Shahed-136 drones, and by October 2022, Ukraine confirmed their use in Russian attacks (Iran International, 2024)	- 83.7% enrichment traces (2023/8) - Estimated stockpile to 4,744.5kg as of 13 May 2023 (2023/24) - IAEA monitoring access has been curtailed since 23 February 2021 (2023/24)	GOV/2023/8 (28 Feb 2023) GOV/2023/24 (31 May 2023)
2024-2025	Israel-Gaza conflict (Burke, 2024) U.S. sanctions maintained (OFAC, n.d.)	- Iran and the Agency discussed halting the expansion of Iran's 60% enriched uranium stockpile, and on 16 November 2024, the Agency verified that Iran had begun preparatory measures to implement this, with further exchanges expected (2024/61) On 21 November 2024, the IAEA Board expressed concern over Iran's lack of cooperation and requested a full compliance report by spring 2025 (2024/68) - 8,294.4kg stockpile (2025/8) - 274.8kg at 60% (2025/8) - Fordow produces 34 kg of 60% enriched uranium per month (2025/8) - Unresolved issues at Varamin and Turquzabad: Undeclared uranium particles found; Iran hasn't explained (2025/10)	GOV/2024/61 (19 November 2024) GOV/2024/68 (21 November 2024) GOV/2025/8 (26 Feb 2025) GOV/2025/10 (26 Feb 2025)

Table 4: Relationship Between Geopolitical Insecurity and Iran's Nuclear Escalation

One year after President Trump announced the U.S. withdrawal from the JCPOA on May 8, 2018, Iran began to gradually scale back its compliance with the agreement's nuclear-related commitments. By February 23, 2021, it had fully ceased the implementation of these obligations, including the Additional Protocol (IAEA, GOV/2023/8: 14).

The period between 2003 and 2006 marked a pivotal shift in Iran's nuclear program, driven by escalating geopolitical pressures and the collapse of diplomatic engagement. The U.S. designation of Iran as part of the "Axis of Evil" in 2002 (Washington Post, 2002) framed Tehran as an adversarial state, exacerbating its security concerns. These anxieties were further amplified by the U.S.-led invasion of Iraq in 2003 (National Archives, n.d.), which demonstrated Washington's willingness to pursue military intervention against perceived regional threats. Concurrently, diplomatic efforts by the EU3 (France, Germany, and the UK.) failed to yield a negotiated solution, culminating in

the breakdown of talks in 2005 (Takeyh, n.d.). Within this climate of heightened insecurity, Iran transitioned from covert nuclear development to overt escalation.

A critical turning point came in November 2003, when the IAEA's GOV/2003/75 report exposed Iran's 18-year history of undeclared nuclear activities, including uranium enrichment via centrifuges and lasers, as well as plutonium separation experiments. This disclosure intensified international scrutiny and set the stage for Iran's gradual abandonment of restraint. Following the failure of EU3 negotiations, Iran resumed uranium enrichment in 2005, and by February 2006 (GOV/2006/15), it had processed approximately 85 metric tons of uranium hexafluoride (UF_6)—a clear signal of its commitment to advancing its nuclear capabilities despite external pressure.

Between 2012 and 2013, a period marked by heightened geopolitical insecurity, Iran significantly escalated its nuclear activities in response to intensified external pressures. The EU imposed an unprecedented oil embargo in 2012, targeting Iran's economic lifeline in retaliation for its advancing nuclear program (BBC News, 2012). Simultaneously, Israeli officials issued explicit military threats (Judis, 2013), while the discovery of the Stuxnet cyberattack—allegedly developed to sabotage Iran's nuclear infrastructure—revealed covert operations aimed at delaying Iran's technological progress (Kushner, 2013). Against this backdrop, Iran increased uranium enrichment levels to 27% U-235 at the Fordow facility (IAEA, GOV/2012/23), far beyond the typical civilian-use threshold. The IAEA also reported a growing stockpile of 7,611 kg of UF6 enriched up to 5% and 232.8 kg enriched up to 20%, indicating both quantitative and qualitative advancement (IAEA, GOV/2012/55). Furthermore, in its 2013 report, the Agency underscored persistent verification gaps, limited access to critical sites such as Parchin site, and unresolved concerns about the possible military dimensions (PMD) of Iran's nuclear program (IAEA, GOV/2013/6). These developments illustrate a clear correlation between Iran's nuclear escalation and the intensification of external threats, suggesting that Iran strategically employed its nuclear program as a tool of deterrence and geopolitical bargaining.

The 2015–2018 period marked a significant shift in Iran's nuclear posture following the implementation of the JCPOA, which provided sanctions relief in exchange for nuclear restrictions (Berger, Dall, Tabrizi, Keatinge, & Stafford, 2016). During this phase, Iran adhered to strict limitations, including capping uranium enrichment at 3.67% and maintaining a stockpile below 300 kg of low-enriched uranium (LEU), as verified by IAEA reports (GOV/2016/8, 2016; GOV/2018/24, 2018). The agreement facilitated diplomatic engagement between Iran and Western powers (EEAS, 2021), mitigating geopolitical tensions. This compliance marked a strategic shift for Iran, highlighting that reduced geopolitical pressure and diplomatic engagement could effectively limit nuclear escalation and enhance transparency in its nuclear activities.

The period from 2018 to 2021 marked a significant shift in Iran's nuclear trajectory, driven by geopolitical insecurity following the United States' withdrawal from the JCPOA on May 8, 2018 (The White House, 2018). This decision intensified Iran's regional rivalries and strained relations with its allies (Alcaro, 2023: 12–13). The U.S. reimposed "maximum pressure" sanctions (Human Rights Watch, 2019), severely limiting Iran's economic and diplomatic leverage, reinforcing Tehran's perception of external hostility.

The escalation continued with the January 3, 2020 assassination of Qasem Soleimani, Iran's Quds Force commander, in a U.S. drone strike in Baghdad—an event that further exacerbated tensions between Iran and Western powers (Cohen, Alkhshali, Khadder, & Dewan, 2020). In response to these developments, Iran systematically breached JCPOA limits, raising uranium enrichment levels to 4.5% in July 2019 (IAEA, GOV/INF/2019/9), followed by a more drastic violation with 20% enrichment at Fordow in January 2021 (IAEA, GOV/INF/2021/2). The most significant escalation occurred in May 2021, when Iran initiated uranium enrichment to 60%, approaching weapons-grade levels (IAEA, GOV/2021/28). The pattern of nuclear developments during this period underscores Iran's strategic rationale: the escalation of geopolitical pressures and economic isolation is directly associated with a corresponding intensification of nuclear advancements, reinforcing Iran's pursuit of regional deterrence and enhanced international leverage.

The deepening of the Russia-Iran relationship during the 2022–2023 period—intensified by the Ukraine war—was perceived as a direct threat by the EU and its member states (Geranmayeh & Grajewski, 2023). Within this evolving geopolitical context, Iran significantly expanded its ties with Russia, prompting a recalibration of its strategic calculus. As Western sanctions against Moscow escalated, Tehran supplied Russia with up to 3,000 Shahed-136 drones, underscoring the growing military dimension of their partnership (Iran International, 2024). This military cooperation coincided with alarming nuclear advancements: the IAEA detected 83.7% enriched uranium traces (GOV/2023/8)—just shy of weapons-grade—while Iran's stockpile surged to 4,744.5 kg of enriched uranium by May 2023 (GOV/2023/24). Concurrently, Tehran curtailed IAEA monitoring access (since February 2021), severely undermining transparency. These developments illustrate a dual-track strategy whereby Iran deepens military alliances to mitigate the effects of economic isolation while simultaneously advancing its nuclear capabilities as a means of deterring Western pressure. This period highlights how shifting geopolitical alignments and the spillover effects of regional conflicts can exacerbate proliferation risks, as Iran capitalizes on great-power rivalries to insulate its nuclear program from international repercussions.

The 2024–2025 period unfolded against the backdrop of heightened regional tensions, particularly the Israel-Gaza conflict (Burke, 2024), which exacerbated Iran's security anxieties amid sustained U.S. sanctions pressure (OFAC, n.d.). While Iran engaged in tentative discussions with the IAEA to halt the expansion of its 60% enriched uranium stockpile—verified in November 2024 (GOV/2024/61)—its nuclear program continued to advance at an alarming pace. By February 2025, Iran's total enriched uranium stockpile reached 8,294.4 kg, including 274.8 kg at 60% enrichment, while the Fordow facility maintained a production rate of 34 kg of 60% enriched uranium per month (GOV/2025/8). These developments occurred alongside persistent IAEA concerns over undeclared nuclear activities, including unresolved uranium particle findings at Varamin and Turquzabad (GOV/2025/10). The IAEA Board of Governors' resolution dated 21 November 2024 (GOV/2024/68), which highlights Iran's continued lack of full cooperation, supports Mearsheimer's argument that in an anarchic international system, states prioritize the preservation of their sovereignty and perceive external oversight as a constraint on their autonomous authority (Mearsheimer, 2001: 31). This period illustrates a complex situation where Iran shows some willingness to discuss limiting its most

sensitive enrichment activities while simultaneously expanding its overall stockpile and facing continued IAEA scrutiny over unresolved safeguards issues, suggesting a nuanced approach to managing international pressure without fundamentally altering its nuclear trajectory. The combination of potential de-escalation talks and ongoing advancements, coupled with transparency concerns, highlights the delicate and uncertain nature of the nuclear standoff.

Iran's nuclear posture following the U.S. withdrawal from the JCPOA in 2018 reflects a deliberate strategy of maintaining nuclear ambiguity. As of 2025, Iran possesses a stockpile of 274.8 kg of highly enriched uranium (HEU) (GOV/2025/8), with senior officials affirming the country's technical capacity while simultaneously denying any intent to pursue weaponization (GOV/2025/10). Former nuclear chief Ali Akbar Salehi asserted that Iran had "crossed all the lines," indicating full technological readiness, whereas current nuclear head Mohammad Eslami emphasized that Iran's decision not to build a bomb is a strategic choice rather than a technical constraint. This ambiguity, especially surrounding Supreme Leader Khamenei's 2004 fatwa against nuclear weapons, allows Iran to benefit from nuclear deterrence without openly violating nonproliferation norms (Dalton & Levite, 2024).

Iran's nuclear program (2003-2025) exemplifies Mearsheimer's offensive realism, where international anarchy compels states to maximize power for survival (Mearsheimer, 2001, pp. 2, 29). Geopolitical challenges like the "Axis of Evil" label (2002) (Washington Post, 2002) the Iraq invasion (2003) (National Archives, n.d.), and the U.S. withdrawal from the JCPOA (2018) spurred Iran's shift from covert efforts to overt nuclear escalation. By 2023, Iran had enriched uranium to 83.7%, possessing a 2025 stockpile of 8,294.4 kg, including 274.8 kg at 60% (GOV/2003/75; GOV/2023/8; GOV/2025/8). This deterrence-focused strategy aligns with Mearsheimer's view of self-help in an anarchic system (Mearsheimer, 2001, pp. 21, 30-32).

Mearsheimer's concept of relative gains explains Iran's fluctuating cooperation and escalation (Mearsheimer, 2001, pp. 36, 58). While adhering to JCPOA limits (2015-2018) (GOV/2016/8; GOV/2018/24), Iran breached the deal post-U.S. withdrawal, enriching to 20% in 2021 and 60% later, reacting to sanctions and Soleimani's assassination (Cohen, Alkhshali, Khadder, & Dewan, 2020). (GOV/INF/2021/2; GOV/2021/28). Its alignment with Russia (2022-2023), including drone supplies Iran International, 2024), leverages great-power rivalries against Western isolation, reflecting Mearsheimer's skepticism of cooperation benefiting rivals (Mearsheimer, 2001: 51-52).

Beyond its nuclear program, Iran's emphasis on conventional military power, including the Quds Force, Hezbollah, and drones, supports Mearsheimer's argument about enduring strategic rivalry despite mutual deterrence (Mearsheimer, 2001: 231–233). These serve as tools complementary to nuclear deterrence, evident in its involvement in the 2024 Israel-Gaza conflict (Burke, 2024). However, as Mearsheimer warns (Mearsheimer, 2001: 37-39), miscalculation risks remain high. Escalations like the 2012-2013 move to 27% enrichment and restricted IAEA access since 2021, alongside unresolved safeguards issues, highlight potential triggers for retaliation (GOV/2012/23; GOV/2025/10).

Iran's selective offensive strategies have yielded results like lifted JCPOA sanctions and stronger ties with Russia. Yet, Mearsheimer's caution against overreach (Mearsheimer,

2001: 39-40), exemplified by Nazi Germany, underscores the dangers of Iran's approach, especially with its near-breakout capacity in 2025 (GOV/2025/8). While Iran's nuclear ambiguity and partial 2024 cooperation (GOV/2024/61) suggest pragmatism, the high stakes of power maximization in anarchy make survival contingent on avoiding catastrophic escalation.

Offensive Realism and Iran's Nuclear Ambitions: An Analysis of IAEA Assessments (2024–2025)

The IAEA Director General's statements from March 2024 to March 2025 reveal a deepening concern over the trajectory of Iran's nuclear program. The reports point to a persistent increase in uranium enrichment levels, systematic non-compliance with safeguards obligations, and limited transparency and cooperation. Across four key reporting periods, several trends emerge: growing quantities of highly enriched uranium, unresolved safeguards-related questions, and inconsistencies in Iran's engagement with the Agency.

Key Issue	03 March 2024 Statement (IAEA, 2024a)	03 June 2024 Statement (IAEA, 2024b)	20 November 2024 Statement (IAEA, 2024c)	03 March 2025 Statement (IAEA, 2025a)
Uranium Enrichment	60% stockpile slightly decreased	60% stockpile increasing	Increasing, but Iran began 'preparatory measures' at Fordow/Natanz	182kg→275kg (+51%) - only non-nuclear state at weapons-threshold level
Additional Protocol	3 years without access	>3 years without access	3 years 9 months without access	4 years without access
Safeguards Issues	Varamin/Turquzabad unexplained	Varamin/Turquzabad unexplained	Varamin uranium particles & material balance discrepancy unresolved	Discrepancy in uranium metal experiments at Jaber Ibn Hayan Lab (unaccounted)
Modified Code 3.1	Not implemented (legal obligation)	Not implemented	Not implemented	Not implemented
Inspector Access	Iran blocked experienced inspectors	Still blocking inspectors - no progress	Agrees to consider 4 new inspectors	Fails to accept 4 inspectors after initial willingness
Joint Statement	Iran stopped cooperating	Proposals to revive the March 2023 agreement	No progress despite renewed talks	No significant progress
Diplomatic Engagement	Urges Iran to work together	May 2024 Tehran meetings held but no progress	November 2024 Tehran meeting with President Pezeshkian	Room for compromise" signaled in Tehran presidential meetings

Table 5: Comparative Examination of Four IAEA Director General Statements (2024–2025)

In the March 3, 2024 statement, Director General Grossi notes that while Iran's stock of 60% enriched uranium had slightly decreased, the overall enriched uranium stockpile continued to grow. A major verification concern is the IAEA's inability to maintain continuity of knowledge for nearly three years regarding centrifuges, heavy water, and

related materials—attributable to Iran's suspension of the Additional Protocol and refusal to provide complementary access (IAEA, 2024a). Unresolved issues surrounding uranium particles found at undeclared locations, notably Varamin and Turquzabad, remain a central point of contention. In addition, Iran's ongoing refusal to implement the modified Code 3.1 of its Subsidiary Arrangements, which constitutes a legal obligation, is emphasized. Questions over Iran's nuclear weapons capabilities, the expiration of the March 2023 Joint Declaration, and the withdrawal of inspector appointments are further fueling international concern and prompting the Director General to call for renewed cooperation (IAEA, 2024a).

By June 3, 2024, the situation became more challenging. The stockpile of 60% enriched uranium had increased, and the IAEA's monitoring gap extended beyond three years (IAEA, 2024b). Safeguards issues at Varamin and Turquzabad remained unresolved, and Tehran continued to disregard implementation of Code 3.1. Statements by Iranian officials suggesting potential doctrinal shifts in the country's nuclear posture contributed to growing doubts about the peaceful nature of its nuclear program. While Director General Grossi's May 2024 visit to Tehran resulted in Iran agreeing to use the March 2023 Joint Statement as a cooperation framework, access for IAEA inspectors remained restricted. This diplomatic opening, while symbolically significant, did not yield substantive progress (IAEA, 2024b).

The statement of November 20, 2024 introduced a nuanced but limited shift in the IAEA's reporting. While both 20% and 60% enriched uranium stockpiles continued to grow, high-level talks in Tehran on November 14 led to Iran initiating preliminary measures to halt further accumulation of 60% enriched uranium. These steps were verified by the IAEA on November 16 at the Fordow and Natanz facilities (IAEA, 2024c). Nonetheless, the monitoring gap had by then reached three years and nine months, and unresolved discrepancies at Varamin, Turquzabad, and concerning nuclear material accounting persisted. Although Iran remained non-compliant with Code 3.1, its agreement to consider the designation of four additional IAEA inspectors, along with ongoing discussions around the Joint Statement, suggested cautious optimism. Director General Grossi's site visits underscored the Agency's sustained commitment to independent verification (IAEA, 2024c).

The March 3, 2025 statement marked a renewed escalation in concerns. Iran's 60% enriched uranium stockpile rose sharply from 182 kg to 275 kg—a 51% increase—making it the only non-nuclear weapon state enriching uranium to levels close to weapons-grade. The IAEA's continuity of knowledge had now been interrupted for four years. A new discrepancy concerning uranium metal production at the Jaber Ibn Hayan Laboratory compounded the unresolved issues at Varamin and Turquzabad (IAEA, 2025a). Iran continues to ignore Code 3.1 and retracts its commitment to accept four additional inspectors. No progress is made on the Joint Statement, prompting Grossi to announce a comprehensive assessment of undeclared nuclear materials, a step with significant diplomatic implications. Despite these challenges, Grossi remains hopeful for dialogue following his November 2024 meetings with President Masoud Pezeshkian (IAEA, 2025a).

The IAEA Director General's statements from March 2024 to March 2025 provide a detailed account of Iran's evolving nuclear activities, which, when analyzed through the framework of offensive realism, illustrate Iran's strategic behavior in the international system. Offensive realism, a structural theory of international politics developed by John Mearsheimer (2001), posits that states operate in an anarchic system and seek to maximize their power relative to others to ensure survival and achieve regional hegemony. This perspective suggests that Iran's nuclear trajectory is not merely defensive or symbolic, but a deliberate strategy aimed at enhancing its relative capabilities and asserting regional dominance in a competitive and insecure Middle Eastern environment.

A core principle of offensive realism asserts that states continuously seek to enhance their power—particularly military capabilities—to gain a strategic edge. In this framework, Iran's consistent stockpiling of enriched uranium, notably at 60% purity, nearing weapons-grade levels, exemplifies this power-maximization strategy. The 51% increase in 60% enrichment underscores Iran's intent to strengthen its deterrence posture, aligning with Mearsheimer's argument that states pursue capabilities to bolster security. Great powers pursue regional hegemony as a means of securing dominance, recognizing the challenge of projecting control across vast oceans, which makes global supremacy unattainable. To strengthen their position, these powers seek substantial economic advantage, maintain the most formidable land, air, and naval forces in their region, and, when possible, strive for nuclear superiority, despite its immense difficulty (Mearsheimer, 2001: 138).

According to the IAEA statements, Iran's stockpile experienced a sharp 51% increase between November 2024 and March 2025, growing from 182 kg to 275 kg, despite a brief period of restraint. Such developments position Iran as the only non-nuclear state enriching uranium at near weapons-grade levels (IAEA, 2025a). This progression aligns with Mearsheimer's assertion that great powers inherently distrust each other and relentlessly pursue power maximization to ensure survival, often triggering security dilemmas where defensive actions provoke rivals (Mearsheimer, 2001: 138–140). Their ultimate goal is regional hegemony, as only dominance eliminates existential threats.

Iran's nuclear strategy, marked by advances in enrichment and non-compliance with IAEA safeguards, reinforces its aim to enhance regional status and deter external threats. In this context, the persistent refusal to implement the Additional Protocol and Modified Code 3.1, alongside obstruction of inspector access, highlights Iran's strategy of strategic ambiguity. Unresolved issues, such as uranium particles at undeclared sites like Varamin and discrepancies in uranium metal experiments at the Jaber Ibn Hayan Laboratory, illustrate this approach (IAEA, 2024a –2025a). This calculated opacity, from an offensive realism perspective, is rational in an anarchic international system, where Iran seeks to bolster its strategic flexibility and minimize vulnerability to external intervention. However, great powers cannot always act on their offensive intentions; their behavior is constrained by both their capabilities and careful consideration of the balance of power. As Mearsheimer notes, "A state has to know its limitations to survive in the international system" (Mearsheimer, 2001: 37). Even rational states may miscalculate due to imperfect information - such as misjudging an adversary's resolve or military performance (Mearsheimer, 2001: 38-39).

Iran’s engagement with the IAEA and its diplomatic overtures during 2024–2025—such as meetings with the IAEA in Tehran and communications with Iranian President Pezeshkian—were marked by limited substantive progress, reflecting a performative use of diplomacy (IAEA, 2025a). These interactions seem primarily aimed at deflecting international attention and sanctions, without making meaningful commitments to restrict Iran’s nuclear activities. For instance, Iran’s agreement to consider new inspector appointments in November 2024 and its temporary halt of 60% enrichment align with Mearsheimer's (2001) concept of *calculated aggression*. According to Mearsheimer (2001), Iran’s nuclear strategy exemplifies the behavior of states operating in an anarchic system, as they engage in calculated aggression—moderating short-term actions like enrichment halts or diplomatic engagement, while focusing on long-term power accumulation through nuclear advancements. This strategy aligns with Mearsheimer's view that rational states weigh the costs and risks of offensive actions against the expected benefits (Mearsheimer, 2001: 37), advancing their capabilities only when the balance of power shifts in their favor.

Iran’s behavior reflects a broader historical pattern where states calibrate their aggression. Its public diplomacy, presenting a facade of peaceful intentions, mirrors Mearsheimer’s description of strategic deception, masking its covert nuclear ambitions. At the same time, Iran’s periodic enrichment escalations and violations of safeguards demonstrate the fundamental reality of international relations, as outlined by Mearsheimer: states inherently seek opportunities to enhance their power (Mearsheimer, 2001: 37-39). Iran’s nuclear hedging thus serves as a prime example of offensive realism, blending public restraint with an ongoing pursuit of power maximization.

Iran's behavior mirrors historical cases where states carefully calibrated their aggression: its public diplomacy performs the kind of strategic deception Mearsheimer describes, presenting peaceful intentions while continuing covert nuclear development. Meanwhile, its enrichment escalations and safeguards violations reveal what Mearsheimer terms the fundamental reality of international politics - that 'states are inclined to look for opportunities to gain more power' (Mearsheimer, 2001: 37-39). The Islamic Republic's nuclear hedging thus represents a textbook case of offensive realism in action, combining public restraint with persistent power maximization."

However, certain developments complicate a purely offensive realist interpretation. Iran’s temporary “preparatory measures” to halt high-level enrichment in late 2024, and its diplomatic signaling of “room for compromise” in 2025, may indicate a level of responsiveness to international pressure that could be interpreted through a defensive realist lens. These actions suggest a degree of pragmatism in Iran’s strategic calculus, potentially driven by domestic political or economic constraints that limit the extent of its power-maximizing behavior. Although offensive realism allows for temporary restraint to avoid excessive backlash (Mearsheimer, 2001: 37-39). It does not fully account for the internal dynamics that may moderate a state’s foreign policy behavior (Mearsheimer, 2001: 156-157). Thus, while Iran’s long-term trajectory conforms to offensive realist predictions, occasional moderation suggests a nuanced strategic posture that incorporates both internal and external calculations.

In conclusion, the IAEA Director General's statements between March 2024 and March 2025 offer empirical support for the offensive realist interpretation of Iran's nuclear ambitions. Iran's escalating enrichment activities, persistent safeguard violations, and calculated diplomatic maneuvers align with the core premises of offensive realism, illustrating a deliberate strategy of power maximization aimed at deterring rivals and securing regional hegemony. These actions—marked by a 51% increase in 60% enriched uranium, strategic opacity, and limited cooperation with international monitoring—demonstrate Iran's effort to assert itself as a dominant regional actor. While certain measures may reflect tactical restraint or domestic limitations, the broader trajectory underscores Iran's realist pursuit of relative power in a competitive international environment.

Conclusion

This study has traced the trajectory of Iran's nuclear program from 1950 to 2025, using John J. Mearsheimer's offensive realism to explain Iran's consistent pursuit of power and regional dominance within an anarchic international system. Drawing on IAEA reports, historical turning points, and especially the developments surrounding the 2021-2025 U.S.-Iran nuclear negotiations, the findings show that Iran's actions conform to the logic of offensive realism: in the absence of a central authority, states rely on self-help and relentlessly pursue relative gains to ensure survival. Iran's recent enrichment activities, including a 51% increase in its 60% enriched uranium stockpile, reflect a deliberate effort to boost deterrence, challenge rivals, and secure a dominant role in the Middle East.

Iran's nuclear program under the Shah, as analyzed through Mearsheimer's offensive realism, reflects a strategic response to systemic anarchy, where Iran pursued nuclear power to enhance regional influence amid distrust and competition with the U.S. Driven by instrumental aggression, the program was a rational bid for survival and sovereignty, not inherent belligerence. Both Iran and the U.S. prioritized relative gains, rejecting cooperation that risked unequal power shifts, illustrating the anarchic system's competitive imperatives.

According to Mearsheimer's offensive realism, the anarchic nature of the international system compels states to pursue power maximization and regional hegemony as a means of ensuring survival. Iran's nuclear trajectory from 2003 to 2025 aligns closely with this framework. External pressures—such as U.S. sanctions, Israeli threats, and the collapse of the JCPOA—have driven Iran to intensify its nuclear activities, including enriching uranium to near weapons-grade levels, a milestone no other non-nuclear state has reached. This calculated escalation demonstrates Iran's effort to enhance strategic autonomy and deter adversaries in an increasingly hostile environment. Key geopolitical events—including the 2002 "Axis of Evil" speech, the 2003 Iraq invasion, and the 2018 U.S. withdrawal from the JCPOA—triggered Iran's expanded nuclear efforts, leading to a 2025 stockpile of 8,294.4 kg of enriched uranium, with 274.8 kg enriched to 60%. Iran's oscillation between compliance (2015–2018) and post-2018 escalation, coupled with conventional strategies such as Quds Force operations and alignment with Russia, illustrates Mearsheimer's principles of relative gains and enduring strategic rivalry. Yet, actions like restricting IAEA access increase the risk of misperception and unintended escalation. Although Iran's selective offensive strategies have yielded tactical benefits,

Mearsheimer's historical analogies caution that overreach in pursuit of security may ultimately invite greater instability.

Iran's nuclear program serves as a paradigmatic example of offensive realism, illustrating how systemic anarchy drives states to pursue survival through power maximization and the prioritization of relative gains. From the Shah's initially peaceful ambitions to the Islamic Republic's nuclear hedging, Iran's actions reflect structural imperatives—resisting external constraints and enhancing strategic autonomy—rather than purely ideological motivations.

The 2025 Muscat nuclear negotiations serve as a contemporary example of offensive realism in action. Iran's insistence on preserving its enrichment capability and the U.S. demand for dismantlement reveal a zero-sum competition over strategic advantage. Statements from key negotiators—such as Iran's Araqchi refusing compromise saying "no room for compromise on uranium enrichment" and the U.S.'s Witkoff demanding full rollback saying "no enrichment"—highlight the deep mistrust and power-maximizing aims of both sides. This confirms Mearsheimer's argument that states focus on relative rather than absolute gains, making durable cooperation difficult when national survival is at stake.

The IAEA's findings between March 2024 and March 2025 offer strong empirical support for the offensive realist interpretation. Iran's refusal to cooperate fully—by denying access to inspectors and halting implementation of the Additional Protocol—demonstrates a strategic use of ambiguity. Persistent concerns over undeclared activities and unexplained uranium traces show Iran's commitment to minimizing transparency while advancing its nuclear capabilities. Despite showing slightly decreased uranium enrichment in early 2024, Iran's renewed escalation by March 2025 highlights its opportunistic approach to power accumulation, consistent with Mearsheimer's argument that states act aggressively when the strategic environment allows.

Iran's nuclear development cannot be separated from its broader regional ambitions. Through its backing of proxy groups, strategic partnership with Russia, and active involvement in regional conflicts, Iran seeks to expand its influence across the Levant—particularly in Lebanon, Syria, and surrounding areas—as well as in Iraq and Yemen. It seeks to strengthen this regional position by serving both as a deterrent and a means of power projection with its nuclear capability. Iran's "forward defense" doctrine, developed in response to its weaknesses during the Iran-Iraq War, further supports Mearsheimer's thesis that states adopt assertive strategies to secure their positions in the international hierarchy.

This analysis also critiques liberal institutionalism by demonstrating the limited ability of international regimes like the NPT, JCPOA, and IAEA to constrain a determined state like Iran. The collapse of the JCPOA after the U.S. withdrawal in 2018, Iran's enrichment to 60% in 2021, and the failure of mechanisms like INSTEX and the Vienna talks illustrate the weakness of institutional tools in the face of strategic competition. Iran's refusal to comply with IAEA demands, as noted in reports like GOV/2024/68, reflects a prioritization of sovereignty and deterrence over cooperative norms, reinforcing the logic of self-help in an anarchic system.

This study contributes to the academic literature by repositioning Iran's nuclear ambitions within the framework of offensive realism, offering a comprehensive view that synthesizes historical context, recent IAEA data, and the evolving diplomatic landscape. It underscores Mearsheimer's concept of the "tragic nature of great power politics," where even security-seeking states adopt aggressive strategies under systemic pressure. By focusing on relative gains and strategic ambiguity, Iran exemplifies this realist dilemma.

While offensive realism effectively explains Iran's systemic nuclear motivations, its structural focus cannot fully account for domestic pressures like factional politics or sanctions fatigue that drove tactical shifts such as the 2024 enrichment pause. Future research should incorporate these internal dynamics and compare cases like Israel and Pakistan to develop a more comprehensive understanding of nuclear decision-making that bridges systemic and domestic factors.

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