

## **The Proliferation of Weapons of Mass Destruction: The Iran Nuclear Deal**

**Akeem Aderayo Saraki & Femi Samuel Oladele**

Department of Politics and Governance,  
Kwara State University, Malete, Kwara State, Nigeria  
*Corresponding author: akeem.saraki@kwasu.edu.ng*

### **Abstract**

**T**he proliferation of Weapons of Mass Destruction (WMDs) poses a significant threat to global peace and security, making it a critical area of focus in international relations. Employing theoretical framework and empirical review methods, this paper used Liberal Institutionalism (LI) and reviewed more than twelve (12) studies to examine four key objectives. The paper examined the role of international relations in curbing WMD proliferation, with a specific focus on the Iran Nuclear Deal, officially known as the Joint Comprehensive Plan of Action (JCPOA). The study also explored the multilateral negotiations that led to the JCPOA, emphasizing the intersection of diplomacy, power dynamics, and global governance in addressing WMD threats. It analyzed the successes and challenges of the agreement, of the JCPOA, with a particular focus on the consequences of the United States' withdrawal under the Trump administration, which destabilized the agreement and reignited proliferation risks. Finally, the study underscored the importance of sustained international cooperation, robust institutional frameworks, and the delicate balance of incentives and enforcement in managing WMD proliferation. The findings contributed to the discourse on how international relations effectively address the proliferation of WMDs, providing lessons for future engagements in arms control and disarmament. It concluded by offering policy recommendations for strengthening global non-proliferation efforts, emphasizing the role of multilateral diplomacy, adaptive agreements, and the need to rebuild confidence among stakeholders.

**Keywords:** Weapons of Mass Destruction, Joint Comprehensive Plan of Action, Iran Nuclear Deal, International Relations, Non-Proliferation, Diplomacy.

### **Introduction**

The proliferation of Weapons of Mass Destruction (WMDs) remains one of the most pressing threats to international peace and security in the 21st century. Comprising nuclear, chemical, biological, and radiological weapons, WMDs have the potential to cause catastrophic damage to human life, the environment, and global stability. Their development and dissemination pose grave challenges to the international community, threatening to escalate regional conflicts, embolden rogue states, and undermine global security frameworks (Ahmed and Al Diab Al Azzawi, 2024). Consequently, the containment and eventual eradication of WMD proliferation have been key priorities in international relations, necessitating collective action through diplomacy, sanctions, treaties, and multilateral frameworks (Kristensen and Norris, 2014). Among the most prominent recent efforts in this domain is the Iran Nuclear Deal, formally known as the Joint Comprehensive Plan of Action (JCPOA).

The JCPOA, finalized in July 2015, represents a landmark achievement in the global non-proliferation regime. Negotiated between Iran and the P5+1 group of nations (the United States, the United Kingdom, France, Russia, China, and Germany) under the auspices of the European Union, the agreement sought to address longstanding international concerns about

Iran's nuclear program. For over a decade prior to the JCPOA, Iran's nuclear ambitions had been a focal point of international tension, with Western powers alleging that Tehran was covertly seeking to develop nuclear weapons under the guise of a civilian nuclear energy program. This suspicion had led to a series of crippling economic sanctions, diplomatic isolation, and the looming spectre of military conflict in the Middle East (Mousavian and Mousavian, 2018; Mills, 2024).

The JCPOA's central objective was to ensure that Iran's nuclear program remained exclusively peaceful while providing Tehran with relief from economic sanctions. Under the deal, Iran agreed to significant restrictions on its nuclear activities, including limits on uranium enrichment levels, reductions in its stockpile of enriched uranium, and a redesign of its heavy-water reactor to prevent plutonium production. These commitments were to be verified through robust inspections by the International Atomic Energy Agency (IAEA). In return, the P5+1 nations committed to lifting international sanctions, unlocking billions of dollars in frozen assets and enabling Iran's reintegration into the global economy. The agreement was hailed as a triumph of diplomacy, demonstrating the potential of multilateral negotiations to address complex security challenges (Mousavian, 2023).

However, the JCPOA has also been a subject of intense controversy and debate, reflecting broader tensions in international relations. Critics of the deal, particularly in the United States and among its Middle Eastern allies, argued that the agreement provided Iran with significant financial resources without adequately addressing its regional behaviour, including support for proxy groups and ballistic missile development. The U.S. withdrawal from the JCPOA in 2018, under the administration of President Donald Trump, marked a turning point in the deal's trajectory, leading to its partial unravelling as Iran began scaling back its compliance. This development reignited concerns about Iran's nuclear program and underscored the fragility of international agreements in the face of shifting geopolitical priorities (BBC, 2021; European Union, 2021).

The JCPOA's significance extends beyond its specific provisions or its immediate impact on Iran's nuclear activities. It serves as a critical case study in the role of international relations in addressing the proliferation of WMDs. The deal highlights the interplay between diplomacy, enforcement mechanisms, and the balancing of national interests in the pursuit of collective security. It also underscores the challenges of sustaining multilateral agreements in a polarized international environment, where strategic rivalries and domestic politics often undermine consensus-building efforts (Wielgos, 2020; BBC, 2020). The Iran Nuclear Deal exemplifies the complexity of managing WMD proliferation in a multipolar world. It underscores the necessity of reconciling divergent interests and ideologies to achieve common security objectives. At the same time, it reveals the vulnerabilities of international agreements to unilateral actions and geopolitical shifts, raising critical questions about the sustainability of multilateralism in an era of resurgent nationalism and strategic competition. As the international community grapples with renewed challenges posed by WMD proliferation—including North Korea's nuclear program and advances in hypersonic missile technologies—the lessons of the JCPOA remain highly relevant (McCarthy, 2020; Wielgos, 2020).

In the sections that follow, this research will provide a comprehensive analysis of the JCPOA within the broader context of international efforts to combat WMD proliferation. It will begin by tracing the historical background of Iran's nuclear program and the evolution of international responses leading up to the agreement. Subsequently, it will analyze the

negotiation process, key provisions, and initial outcomes of the JCPOA, highlighting the role of international actors and institutions. Finally, the study will examine the deal's unravelling and its implications for the future of non-proliferation and global security. Through this exploration, the research seeks to contribute to a deeper understanding of the dynamics of international relations in addressing one of the most critical challenges of our time.

### **Theoretical Framework – Liberal Institutionalism**

Liberal institutionalism, a cornerstone of international relations theory, emphasizes the role of international institutions, cooperation, and norms in fostering stability and addressing global challenges. Major proponents of Liberal Institutionalism include Woodrow Wilson (1856–1924), David Mitrany (1888–1975), Robert Keohane (b. 1941), Joseph Nye (b. 1937), John Ruggie (1944–2021), Ernst B. Haas (1924–2003) and John G. Ikenberry (b. 1954). Liberal institutionalism posits that states, while inherently self-interested, are rational actors that recognize the benefits of cooperation in mitigating security dilemmas and achieving common goals. The theory underscores the role of international institutions in creating platforms for dialogue, setting norms, and enforcing agreements that mitigate the anarchic tendencies of the international system.

In the case of Weapons of Mass Destruction (WMDs) proliferation, liberal institutionalism highlights the importance of collective efforts, such as the JCPOA, to achieve non-proliferation and maintain global security. Such collective efforts exemplify the principles of liberal institutionalism. The agreement sought to curb Iran's nuclear program in exchange for the lifting of economic sanctions, reflecting a cooperative approach to addressing the dual concerns of nuclear proliferation and regional security. Under the framework of liberal institutionalism, the JCPOA is seen as an institutional mechanism designed to foster transparency, build trust, and ensure compliance with international norms through multilateral engagement.

A key tenet of liberal institutionalism is the role of international organizations in promoting cooperation. The International Atomic Energy Agency (IAEA), tasked with monitoring Iran's compliance under the JCPOA, illustrates the capacity of international institutions to serve as impartial arbiters and enforcers of agreements. Through facilitating inspections and verification measures, the IAEA enhanced transparency and reduced the uncertainty that often drives security dilemmas among states. This approach aligns with liberal institutionalism's belief that institutions reduce transaction costs and foster a cooperative environment, even in the presence of conflicting interests. Moreover, liberal institutionalism emphasizes the value of diplomacy and negotiation in resolving disputes. The JCPOA emerged from protracted negotiations, reflecting a shared recognition among the stakeholders that a cooperative solution was preferable to military confrontation. This process underscores the liberal institutionalist argument that multilateral engagement and dialogue will achieve outcomes that unilateral actions or coercion cannot.

However, the JCPOA's challenges, particularly the United States' withdrawal in 2018 under the Trump administration, demonstrate the fragility of institutional arrangements in the face of shifting domestic and geopolitical priorities. Liberal institutionalism acknowledges that institutions are not omnipotent and depend on the continued commitment of their participants. The withdrawal strained the agreement and highlighted the limitations of institutional mechanisms when trust and political will are eroded. Yet, liberal institutionalism provides a robust framework for understanding the JCPOA's approach to WMD proliferation. This theoretical framework provides a valuable lens through which to analyze the Joint

Comprehensive Plan of Action (JCPOA), commonly known as the Iran Nuclear Deal, in the context of addressing the proliferation of weapons of mass destruction (WMDs). Emphasizing the role of institutions, norms, and cooperation, the theory explains the mechanisms through which the deal sought to achieve non-proliferation. The JCPOA's successes and setbacks underscore both the potential and the limitations of liberal institutionalism in addressing global security challenges. Ultimately, this theory highlights the importance of sustained multilateral commitment to achieving long-term stability and security in the international system.

### **Empirical Data Analysis and Results**

The main concepts highlighted for empirical review and explanation in this study, based on evidence from existing literature, aligning with the research objectives and questions of the research.

### **The Role of International Relations in Curbing WMD Proliferation**

In a study conducted by Xie (2024), titled "The Function of International Law in Modern International Relations: A Constructivist Perspective", international law was identified as a momentous contributor in modern international relations towards rule-making processes, conflict resolution efforts, as well as maintaining order within global relations. The author used constructivist theories within international relations to explain the legal function of international law while strengthening its authority and status, and thereby further explaining its significance within global affairs. The study explored the theoretical underpinnings of international law and an analysis of constructivism within the field of international relations, examined specific operational mechanisms in modern international relations and their contribution to establishing an orderly framework, and reviewed case analysis to examine how these mechanisms have influenced specific events thus revealing their practical impact. The author found that as a normative institutional construct, international law has significantly contributed towards rule-making processes, conflict resolution efforts, as well as maintaining order within global relations. He further found that the construction of international law within international relations is an ongoing evolutionary process necessitating continual adjustment within the broader context.

Similarly, Stivachtis (2016) explored the relationship between the structure of the international system and the use of weapons of mass destruction (WMD), comparing the bipolar Cold War system with the multipolar post-Cold War era. The study examined whether structural differences influence decisions to use WMD or if other factors play a role. It concluded that the anarchic nature of the international system does not directly affect WMD production, acquisition, or use, as these dynamics persist across both periods. However, globalization, reduced ideological rivalry, and interdependence lower the likelihood of war among major powers, while conflicts involving lesser powers remain possible. Increased WMD proliferation, domestic instability, and weak crisis management mechanisms heighten risks of use in crises. The study recommends intensified WMD control, crisis prevention frameworks, strengthened domestic stability, collaborative anti-terrorism efforts, and strict enforcement of WMD regulations to mitigate these risks.

Furthermore, a report by Sitt, et. al (2010), titled "Sanctions and Weapons of Mass Destruction in International Relations", examined sanctions related to the proliferation of Weapons of Mass Destruction (WMD), highlighting the challenges of non-compliance with arms control, non-proliferation, and disarmament agreements over the past two decades. It explored the varied responses to these violations, ranging from sanctions to armed conflict,

and evaluates whether sanctions can address current and future issues. The study aimed to derive lessons from past crises to improve decision-making, refine sanctions' roles, and propose recommendations for their effective implementation. The report analyzed the strategic and geopolitical drivers of WMD proliferation, focusing on the motivations of proliferating countries and gave an inventory of existing sanctions, while contrasting traditional comprehensive measures with targeted "smart" sanctions and other influence strategies. It also reviewed international approaches to sanctions, including those implemented by the UN Security Council, regional bodies like the EU, and unilateral measures and provided case studies of countries whose WMD policies threaten peace and stability. The authors concluded with an evaluation of WMD sanctions regimes, addressing their effectiveness and proposing recommendations, such as establishing a permanent WMD entity under the UN Security Council, to enhance global non-proliferation efforts.

### **The Multilateral Negotiations that Led to the JCPOA**

Tracing the multilateral negotiations that led to the JCPOA, Mousavian and Mousavian (2018), in their study "Building on the Iran Nuclear Deal for International Peace and Security", recounted that after almost 20 months of intense negotiations, Iran and six world powers – Germany, France, the United Kingdom, Russia, China, and the United States – agreed on a Joint Comprehensive Plan of Action (JCPOA) to resolve the nuclear impasse concerning Iran in July 2015. The deal provided verifiable assurances that fissile material in Iran could not be diverted toward weaponization purposes; the highest standards on nuclear transparency and inspections ever negotiated; and the lifting of US and United Nations nuclear-related sanctions on Iran. The agreement was welcomed by the international community and endorsed by a UN Security Council resolution. The authors examined the major factors that led Iran and the global powers to reach a deal to include each side's willingness to cash in its main bargaining chips – a short breakout time for Iran and sanctions for the United States, a change in leadership in each country, and a shifting geopolitical context. The study revealed that foremost among the multilateral negotiation factors was the US willingness to change its demands of Iran from no nuclear enrichment to no nuclear bomb. They concluded that JCPOA has had major implications for the global powers and Iran, affecting especially the bilateral US-Iran relationship, the regional security situations, and US domestic politics.

Valadbaygi (2023), in "Unpacking the 2015 Iran Nuclear Deal (JCPOA): Internationalisation of Capital, Imperial Rivalry and Cooperation, and Regional Power Agency," offers a three-part analysis of the multilateral negotiations that led to the JCPOA. First, the study argues that the Iranian nuclear program and the associated economic sanctions should be understood as part of the broader efforts by major powers – particularly the United States and the European Union – to promote neoliberalism in the Middle East and North Africa. Second, it examines the dynamics of imperial rivalry and cooperation in the post-2008 global economy, suggesting that the nuclear deal was shaped by factors such as the U.S. strategic pivot to the East, China's Belt and Road Initiative in West Asia, and the search for new opportunities for capital accumulation by multinational corporations in the aftermath of the financial crisis. Lastly, the study links the JCPOA to Iran's process of neo-liberalisation, highlighting the emergence of two competing capital factions: the internationally oriented capital faction and the military-bonyad complex, with the former playing a decisive role in achieving the deal. Using the philosophy of internal relations, which critiques the artificial separation of political economy and military-security issues, the author concluded that understanding the Iranian nuclear program and the JCPOA requires examining their intrinsic connections to global neoliberal capitalism.

Serim (2022) in “A Rare Successful Nonproliferation Policy: The JCPOA” discussed how the US administration successfully formulated a non-proliferation policy to convince Iran to engage in nuclear negotiations in the period before the 2015 agreement and how diplomacy and sanctions were used as integrated tools to achieve the goal of non-proliferation. The author also focussed on the administration's agitating for more sanctions and isolation of Tehran from the international community while employing the two diplomatic methods – diplomacy and sanctions. Employing a qualitative research method, the study revealed that, in implementing the strategy, the US administration faced major domestic and foreign challenges. Nevertheless, the US non-proliferation strategy toward Iran contributed to shaping the factors and dynamics of the multilateral negotiations leading to the historic agreement of JCPOA.

### **The Successes and Challenges of the JCPOA, referencing the Consequences of the United States' Withdrawal under the Trump Administration**

Summar and Sarosh (2023), noted in their study titled “JCPOA and Challenges for Non-Proliferation Regime” that the revival of the Joint Comprehensive Plan of Action (JCPOA) pact had become a cumbersome challenge for the Biden administration because the Trump withdrawal from this deal in 2018 caused a significant setback to its efficiency in blocking Iran's path to building nuclear weapons. Using the realist theory lens, the authors opined that the JCPOA is no longer effective to restrict Iran's nuclear ambitions, therefore, there is an urgent threat that the Middle East would be plunged into a nuclear arms race and strategic vulnerability.

Their study revealed that the Non-Proliferation Regime is facing a number of challenges which include a revival of the JCPOA nuclear deal, power imbalances, security dilemma, and polarization among regional countries, continuing proliferation activities, regional security concerns, and domestic political pressures. Similarly, the recent outbreak of the Russia-Ukraine war has intensified Iranian insecurities in forgoing their nuclear program because Iran feels threatened by its regional adversaries viz, Israel and Saudi Arabia. Hence, Iranian hardliners in empowered positions are steering Iran further away from the JCPOA owing to the security dilemma. The authors recommended a sustainable and comprehensive nuclear deal which must be reached with Iran to avoid a nuclear arms race and further proliferation of nuclear weapons in the Middle East.

In “The Struggle to Save the JCPOA: Negotiations to Nowhere?” Miller (2023) identified the failure of President Donald Trump, after withdrawing the United States from the Joint Comprehensive Plan of Action (JCPOA) in 2018, in his subsequent efforts to coerce Iran into capitulation on the nuclear issue or to accept what Washington regarded as a better deal. For this, the Biden Administration inherited a situation in which neither the United States nor Iran was complying with the deal. The author believed that rather than simply reverse Trump's unilateral policy on the JCPOA, Biden Administration launched a diplomatic effort aimed at restoring the agreement while possibly modifying some of its terms to address concerns about Tehran's nuclear progress that had arisen when Iran too began to ignore JCPOA constraints. The study found that the ensuing negotiations were impeded by a tangle of misaligned perceptions and irreconcilable positions. Although, Washington hoped that the leverage provided by Trump's sanctions would give Iran incentives to rejoin the agreement, but this perspective failed to consider that Tehran has its own complaints and reservations about the JCPOA as well as its own internal opposition to the agreement. The study, therefore, concluded that considering the challenges of the JCPOA, more than two years into his

Presidency, Biden Administration has been unable to correct what he regarded as the “gigantic mistake” of withdrawing from the JCPOA.

Employing an exploratory qualitative approach and utilizing an embedded case study method to analyze the phenomenon across multiple levels, Summar, Muhammad, and Irfan (2021), in their research titled “Joint Comprehensive Plan of Action (JCPOA): Prospects and Challenges for the Global Security”, examined the Iranian nuclear ambitions – a critical issue that disrupts the strategic balance and threatens peace in the Middle East, a region of immense geopolitical and geostrategic significance. Their study specifically focused on the Joint Comprehensive Plan of Action (JCPOA), the agreement designed to curb Iran's nuclear programmes. The findings revealed diverse perceptions surrounding the JCPOA and highlighted the critical implications of the US decision for international peace and stability. The research concluded that the United States' withdrawal from the agreement during the Trump administration provided Iran with a justification to intensify its nuclear pursuits. Similarly, the withdrawal has not only undermined the JCPOA's objectives but has also heightened threats to global and regional security.

### **The Importance of Sustained International Cooperation, Robust Institutional Frameworks, and the Delicate Balance of Incentives and Enforcement in Managing WMD Proliferation**

In a policy paper for Stockholm International Peace Research Institute (SIPRI) titled “Strengthening the European Union’s Future Approach to WMD Non-proliferation”, Ian and Grip (2013) revealed that the European Union has developed a robust framework for Weapons of Mass Destruction (WMD) non-proliferation and provided a foundation for future action with its strategy against the proliferation of WMD. The policy report attributed the EU strategy’s success to its comprehensive approach by addressing both state and non-state actors and prioritizing societal security alongside traditional state security. The strategy emphasizes multilateral cooperation over targeting specific nations, thereby ensuring alignment with key international agencies and processes. The report stressed the integrated approach that enables the EU to expand its efforts while aligning with broader security objectives, such as reducing chemical, biological, radiological, and nuclear (CBRN) risks.

It also emphasized the EU’s strategy three priorities for future action. First, it must address geographic challenges and opportunities in regions like North Africa and the Middle East. Second, a coherent link between internal and external security dimensions is needed, incorporating internal crisis management strategies into external programming. Third, establishing a unified EU profile for WMD non-proliferation and CBRN risk mitigation could be achieved by revitalizing the EU WMD Centre. The report concluded that partnership remains central to the EU’s strategy as this fosters multilateral collaboration and engages regions such as Africa, South America, and Southeast Asia. It recommended that first, extending partnerships to the private sector and developing technical standards in areas like nuclear and chemical security could further enhance security. Second, while the EU considers stricter measures like sanctions and embargoes, such steps should be carefully evaluated to maintain the strategy’s cooperative focus. Finally, strengthening democratic oversight of non-proliferation programmes would safeguard against unintended shifts towards confrontational approaches, thereby ensuring the EU remains committed to building a secure and cooperative global environment.

An edited collection of the papers titled “Building a Weapons of Mass Destruction Free Zone in the Middle East Global Non-Proliferation Regimes and Regional Experiences” presented

at the conference organized by the League of Arab States (LAS)/United Nations Institute for Disarmament Research (UNIDIR) on “Establishing a Weapons of Mass Destruction Free Zone in the Middle East: Global Regimes and Regional Experiences”, featured discussions around ten papers that explored three primary themes. The first theme examined the global state of Weapons of Mass Destruction (WMD) regimes, highlighting international efforts and challenges in controlling these weapons. The second theme analyzed regional experiences in establishing Nuclear Weapons Free Zones (NWFZs), assessing their strengths and limitations to draw lessons for the Middle East. The third theme focused on the requirements and obstacles to establishing a Weapons of Mass Destruction Free Zone (WMDFZ) in the Middle East, considering the potential implications for regional security. The conference emphasized the urgent need for all states, international organizations, and civil society to intensify efforts toward revitalizing peace in the Middle East and advancing the establishment of a WMDFZ, calling for innovative and creative approaches to overcome existing challenges and achieve this critical objective. The conference encouraged the organizations to continue exploring the technical and political dimensions of establishing a WMDFZ in the Middle East, while recognizing the importance of such efforts in promoting regional and global security.

Vakil and Quilliam (2020), carried out a study titled “Getting to a New Iran Deal. A Guide for Trump, Washington, Tehran, Europe and the Middle East”, and evaluated the impact of former US President Donald Trump’s ‘maximum pressure’ campaign against Iran and prospects for future negotiations. The research was based on 75 interviews with policymakers and analysts across ten countries. Respondents largely dismissed the possibility of a ‘grand bargain’ on Iran, citing the Trump administration’s zero-sum, sanctions-heavy strategy and its limited grasp of Iran’s priorities. The authors found out that the strategy heightened regional instability, strained US-Europe relations, and enabled Russia and China to exploit divisions, while Iran skillfully leveraged these fractures to its benefit.

They also found that Iran demanded sanctions relief as a precondition for negotiations, with its focus rooted in safeguarding the Islamic Republic’s survival and reshaping regional dynamics rather than purely economic concerns. The study conclusively viewed a revised ‘JCPOA+’ as the most viable resolution, proposing enhancements like extended sunset clauses, greater International Atomic Energy Agency (IAEA) access, and stricter monitoring, alongside constraints on ballistic missiles. Hence, the study recommended that addressing regional issues, such as Iran’s support for actors in Lebanon, Syria, Iraq, and Yemen, as well as its ballistic missile activities, requires a multilateral, European-led approach. Europe is uniquely positioned to mediate these challenges. Regional actors like Israel, Saudi Arabia, and the UAE, frustrated with the ineffectiveness of outsourcing Iran’s containment, should pursue independent bilateral outreach and multilateral strategies that integrate containment and engagement. Therefore, a sustainable resolution hinges on collaboration and a nuanced understanding of Iran’s strategic priorities.

To further the importance of sustained international cooperation, robust institutional frameworks, and the delicate balance of incentives and enforcement in managing WMD proliferation, Bajema and Samii (2004) in “Weapons of Mass Destruction and the United Nations: Diverse Threats and Collective Responses” opined that sustaining broad and transparent compliance with non-proliferation norms over the long term requires more than unilateral demands by a selected group of states. These demands, if unaccompanied by adherence to the principles of the multilateral framework, undermine trust and cooperation. To address this imbalance, it is essential to consider private sector and industrial interests by ensuring that commercial competition in peaceful advanced technologies is conducted on a level playing field. Such an approach minimizes the risk of commercial interests interfering



with nonproliferation efforts. The authors suggested that the urgency of addressing recent proliferation threats underscores the need for innovative international principles and concepts. One such principle is “cooperative threat reduction” (CTR), which focuses on dismantling weapons systems and nuclear, biological, and chemical materials from past conflicts, such as the Cold War, to mitigate future risks. Another promising approach is “universal compliance” – a concept that redefines the normative foundation of non-proliferation regimes, moving away from ideals of universal membership, equal treatment, and sovereign equality. Instead, it advocates for legitimate discrimination against states that fail to fulfill their commitments, thereby strengthening the integrity and effectiveness of global non-proliferation efforts.

### **Discussion of the Findings**

First, the findings based on theoretical application of liberal institutionalism in the context of the Role of International Relations in Addressing the Proliferation of Weapons of Mass Destruction (WMDs) emphasize the significant role of international institutions and norms in addressing global challenges evident in the Joint Comprehensive Plan of Action (JCPOA). Liberal institutionalism highlights how states, despite being self-interested, recognize the value of cooperation through institutional mechanisms to mitigate security dilemmas and achieve shared goals. The JCPOA exemplifies this through its multilateral approach, wherein parties collectively negotiated to curb Iran’s nuclear program in exchange for sanction relief, relying on institutions like the International Atomic Energy Agency (IAEA) to enhance transparency, ensure compliance, and reduce mistrust. The protracted negotiations and the agreement itself underscore liberal institutionalism’s premise that dialogue and multilateral engagement are more effective than unilateral actions. However, challenges such as the U.S. withdrawal in 2018 reveal the fragility of institutional arrangements when political commitment wavers.

Second, through empirical review, this study highlighted the critical role of international relations in curbing the proliferation of weapons of mass destruction (WMD). It underscored the significance of international law as a normative framework that contributes to rule-making, conflict resolution, and global order, emphasizing its evolutionary nature within constructivist theories (Xie, 2024). This study found that structural differences in the international system do not directly influence WMD dynamics. Instead, factors like globalization, reduced ideological rivalry, and interdependence mitigate the likelihood of war among major powers but increase the risk of WMD use in crises due to domestic instability and weak crisis management (Stivachtis, 2016). It further revealed the effectiveness of sanctions in addressing WMD proliferation, analyzing motivations for violations, sanctions’ strategic roles, and proposing reforms, such as establishing a permanent WMD entity under the UN Security Council, to bolster global non-proliferation efforts (Sitt et al., 2010). Thus, this study stressed the complex interplay of law, structural dynamics, and sanctions in managing WMD threats.

The empirical review of the multilateral negotiations leading to the JCPOA revealed a complex interplay of diplomatic strategies, geopolitical shifts, and economic considerations that culminated in the historic 2015 agreement. This study highlighted the key factors behind the deal, including mutual concessions, leadership changes, and a changing geopolitical context, with the US shifting its stance from prohibiting nuclear enrichment to preventing nuclear weaponization (Mousavian and Mousavian, 2018). It also emphasized the role of global neoliberal dynamics, framing the JCPOA as part of broader efforts by major powers to influence economic and political structures in the Middle East while analyzing the internal

tensions in Iran's neo-liberalization process (Valadbaygi, 2023). Similarly, it underscored the US administration's integrated use of sanctions and diplomacy as effective non-proliferation tools, despite domestic and international challenges (Serim, 2022). Importantly, this study illustrated how the JCPOA emerged from a combination of strategic negotiations, economic imperatives, and shifting global power dynamics, and which significantly impact the US-Iran relations, regional security, and international diplomacy.

The empirical review on the successes and challenges of the Joint Comprehensive Plan of Action (JCPOA) and the consequences of the U.S. withdrawal under the Trump administration emphasized the difficulty in reviving the JCPOA, noting that the U.S. exit in 2018 weakened its effectiveness in curbing Iran's nuclear ambitions. This study revealed that the JCPOA's failure has escalated the Middle East's vulnerability to a nuclear arms race, driven by power imbalances, regional security dilemmas, and domestic political pressures (Summar and Sarosh, 2023). This study underscored the Biden administration's struggle to restore the JCPOA amidst the damage caused by Trump's withdrawal. Efforts to re-engage Iran were hampered by conflicting perceptions and internal opposition in both countries. The U.S.'s reliance on Trump-era sanctions as leverage failed to account for Iran's grievances and strategic priorities, thereby leaving the Biden administration unable to reverse the withdrawal's impact after two years (Miller, 2023). Furthermore, this study analyzed the strategic disruptions caused by the U.S. withdrawal, and concluded that it emboldened Iran to advance its nuclear program, while undermining global security (Summar, Muhammad, and Irfan, 2021).

The empirical review on the role of sustained international cooperation, robust institutional frameworks, and a nuanced balance of incentives and enforcement in managing the proliferation of Weapons of Mass Destruction (WMD) highlighted the European Union's (EU) comprehensive WMD non-proliferation strategy, emphasizing its success in integrating multilateral partnerships, societal security, and geographic adaptability. The EU sets a model for addressing both state and non-state proliferation threats by aligning with global agencies and emphasizing internal-external security coherence. Recommendations include revitalizing institutional mechanisms, such as the EU WMD Centre, extending private sector collaborations, and ensuring democratic oversight to sustain the strategy's cooperative nature (Ian and Grip, 2013).

Similarly, the LAS/UNIDIR conference proceedings explored the viability of establishing a WMD-Free Zone in the Middle East, showcasing the importance of learning from global and regional non-proliferation frameworks. The discussions highlighted the urgent need for innovative approaches to overcome political and technical barriers, calling for intensified collaboration among states, international organizations, and civil society (Cserveny, et. al., 2004). Also, the study advocated for a multilateral, European-led strategy to address Iran's WMD-related challenges. It also stressed the need for collaborative regional initiatives, enhanced monitoring mechanisms, and understanding Iran's strategic priorities (Vakil and Quilliam, 2020). Finally, the study extended this perspective by advocating principles like "cooperative threat reduction" and "universal compliance" to bolster global non-proliferation regimes. It emphasized equitable industrial competition and trust-building, as such highlighted the need for innovative, inclusive frameworks to ensure long-term adherence to non-proliferation norms (Bajema and Samii, 2004).

## Conclusion

The theoretical application of liberal institutionalism, as well as an empirical review of efforts to combat the proliferation of weapons of mass destruction (WMDs), highlight the importance of international cooperation, strong institutional frameworks, and multilateral diplomacy in mitigating global security threats. The Joint Comprehensive Plan of Action (JCPOA) is a prime example, demonstrating the effectiveness of multilateral negotiations, transparency systems, and the involvement of international institutions such as the International Atomic Energy Agency (IAEA) in promoting compliance and lowering mistrust. However, events such as the United States' exit from the JCPOA highlight the vulnerability of institutional frameworks when political will and commitment fail. Similarly, empirical studies emphasize the interplay of international law, sanctions, and geopolitical factors, which collectively affect the effectiveness of non-proliferation initiatives.

The study also highlights the significance of regional and global frameworks in combating WMD proliferation, such as the European Union's integrated WMD non-proliferation strategy and suggestions for a WMD-Free Zone in the Middle East. These initiatives highlight the importance of innovative techniques, trust-building, and equal industry rivalry in ensuring long-term adherence to non-proliferation rules. The JCPOA's triumphs and challenges show how strategic negotiations, economic imperatives, and altering global power dynamics affect international diplomacy and regional security. Nonetheless, the United States' withdrawal upset the balance, emboldening Iran's nuclear ambitions and hampering efforts to revive the pact. These findings emphasize the importance of long-term international cooperation, nuanced enforcement mechanisms, and the engagement of a diverse range of stakeholders in order to improve global security and reduce WMD threats.

## Recommendations

This study shares some recommendations:

- i. First, international relations practitioners should prioritize the reinforcement and evolution of international law in order to adapt to contemporary security issues, while also providing strong frameworks for rule-making and conflict resolution. Policymakers should promote global interdependence and collaboration to reduce the risk of WMD use, particularly during crises, by addressing internal instability and boosting crisis management capabilities in vulnerable countries. Furthermore, the international community should improve the strategic implementation of sanctions by including detailed motivation studies and reforming institutions, such as establishing a permanent WMD oversight entity inside the UN Security Council. This would give a centralized, proactive approach to non-proliferation activities, resulting in more accountability and coordination in dealing with the intricacies of WMD threats.
- ii. Future policy-making and talks should build on the lessons learned from the JCPOA process by promoting a balance between geopolitical and economic factors. To increase the likelihood of achieving long-lasting accords, policymakers should prioritize making compromises to one another while adjusting to shifting global power structures and shifts in leadership. It is important to properly balance the combined use of diplomacy and sanctions to promote non-proliferation objectives and minimize humanitarian effects. Additionally, as internal political and economic conflicts inside negotiating states have a big impact on the results of multilateral accords, more focus should be placed on controlling them. Finally,

- to make sure that agreements support stability and fair economic growth, the interaction between regional security concerns and global neoliberal tendencies needs to be carefully evaluated.
- iii. It is advised that stakeholders give priority to a multilateral strategy for renewing the JCPOA in order to address the issues noted, with a focus on measures that foster trust and fair communication to resolve complaints from all sides. The United States should reconsider using sanctions as its main weapon and instead implement measures to foster confidence that are in line with Iran's strategic interests. In order to promote a framework for collective security and lessen power disparities and security issues in the Middle East, regional players and international organizations should also be involved. Policymakers in the United States and Iran must communicate openly with their constituents, emphasizing the advantages of stability and non-proliferation, in order to overcome domestic resistance. Last but not least, world powers must endeavor to create a strong system to stop unilateral acts that jeopardize international agreements, while ensuring sustainable progress in curbing nuclear proliferation.
  - iv. Lastly, it is recommended that international cooperation be strengthened through the revitalization of institutional institutions such as the EU-WMD Centre, as well as the expansion of multilateral partnerships involving the private sector and civil society. Democratic supervision should be prioritized to increase transparency and credibility. Drawing on previous frameworks, novel regional policies, such as a Middle East WMD-Free Zone, should be pursued by breaking down political and technical hurdles through increased collaboration between governments and global organizations. To address specific difficulties, such as Iran's WMD fears, a European-led multilateral strategy centered on improved surveillance, trust-building, and understanding of regional dynamics is critical. Incorporating principles like "cooperative threat reduction" and "universal compliance" will promote fair industrial rivalry and long-term adherence to nonproliferation rules. These activities try to combine enforcement and incentives for global security coherence.

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