A Balancing Act: the Kingdom of Saudi Arabia's Nuclear Strategy in the Middle Eastern region Power Grid

Navigating Saudi Arabia's Nuclear Ambitions: A Multifaceted Analysis of Regional and Global Perspectives

Sasan Karimi[1*], Parisa Sadat Tabatabaei Rad[2]

Abstract

Saudi Arabia's nascent nuclear program has emerged as a complex and contentious issue with implications that extend far beyond its borders. Since first broaching the topic in 2006 under the GCC umbrella and independently from 2009, Saudi Arabia's nuclear ambitions have sparked concerns and dilemmas in Tehran and Washington, among other global stakeholders. This paper delves into the multifaceted dimensions of Saudi Arabia's nuclear program, considering its implications for regional dynamics and international cooperation.

The United States, known for its adherence to the "Gold Standard" in nuclear cooperation, faces a dilemma in its approach to Saudi Arabia. This dilemma revolves around the dual challenge of supporting a strategic partner while being cautious about Saudi Arabia's alignment with China, a major global competitor. Furthermore, it involves preventing Saudi Arabia from emerging as a nuclear rival to Israel.

Conversely, Tehran's perspective on Saudi Arabia's nuclear program is a nuanced one. On one hand, supporting Saudi Arabia's pursuit of a peaceful nuclear program with complete fuel cycle capabilities and enrichment can help normalize the idea of nuclear energy in the region. On the other hand, it underscores the rivalry between Iran and Saudi Arabia, two key regional players vying for influence and nuclear capabilities.

This paper provides a comprehensive analysis of the divergent nuclear strategies employed by Iran and Saudi Arabia within the context of the international environment and relevant organizations. It explores the varied approaches taken by regional and global actors, including Saudi Arabia itself, Iran, the United States, China, Russia, France, and Israel, shedding light on the potential paths Saudi Arabia's nuclear program may traverse.

By examining these intricate dynamics, this paper aims to contribute to a deeper understanding of the regional and global implications of Saudi Arabia's nuclear aspirations. Ultimately, it seeks to inform discussions on policy options and diplomatic strategies in the Middle East, where nuclear ambitions are entwined with geopolitical rivalries and security concerns.

Keywords: Saudi's nuclear program, Iran's nuclear program, China, IAEA, Gold Standard, United States, Middle East.

[1] Post-doctoral fellow and adjunct professor, Faculty of World Studies, University of Tehran, (sasan.karimi@ut.ac.ir).

*Responsible author.

[2] Master of Science student of Latin American Studies, Faculty of World Studies, University of Tehran, (parisa.t.rad@ut.ac.ir).

Saudi Arabia's Nuclear Program

2006-2007

The Persian Gulf Cooperation Council (GCC) announced a study on the peaceful use of nuclear energy.
The GCC agreed with the IAEA to cooperate on a feasibility study for a regional nuclear power and desalination program.

2009

Saudi Arabia considered a nuclear power program on its own.

2010

The King Abdullah City for Atomic and Renewable Energy (KA-CARE) was set up in Riyadh to advance the nuclear

2011

KA-CARE appointed WorleyParsons to conduct site surveys and regional analysis for the nuclear power project.

2012

The government adopted a proposal to add 23.9 GWe of renewable capacity by 2020 and 54 GWe by 2032, later pushed back to 2040.

2013

KA-CARE projected 17 GWe of nuclear capacity by 2032, with nuclear construction starting in 2016.
GE Hitachi Nuclear Energy and Toshiba/Westinghouse signed contracts with Exelon Nuclear Partners to pursue reactor construction deals with KA-CARE (King Abdullah City for Atomic and Renewable Energy).

2014

The Saudi Arabian Atomic Regulatory Authority (SAARA) was established.
KA-CARE signed an agreement with the Finnish Radiation and Nuclear Safety Authority (STUK) for assistance in recruiting and training personnel and establishing safety standards.

2015

Saudi government revised its target for 17 GWe of nuclear capacity to 2040. KAERI signed an agreement with KA-CARE to assess the potential for building at least two South Korean SMART reactors in Saudi Arabia.
INVAP from Argentina and Saudi's Taqnia set up a joint venture company, Invania, to develop nuclear technology for Saudi Arabia's nuclear power program.

2016

The government launched the Vision 2030 initiative for 9.5 GW of renewable energy by 2023.
KA-CARE signed an agreement with China Nuclear Engineering Corporation (CNEC) to build a high-temperature reactor (HTR) in the country.
KA-CARE signed an agreement with South Korea's Nuclear Safety and Security Commission (NSSC) to promote cooperation in regulating nuclear safety, safeguards, and physical protection.

2017

The Crown Prince announced the $500 billion Neom project, a city to be fully powered by renewable energy.
KA-CARE solicited proposals for 2.9 GWe nuclear capacity from South Korea, China, Russia, and Japan. A joint working group commenced a formal feasibility study for the project.
CNEC and Saudi Technology Development Corporation signed an agreement for a feasibility study on using high temperature reactors for seawater desalination. The cabinet approved the establishment of the Saudi National Atomic Energy Project (SNAEP) and new regulations for KA-CARE.
China National Nuclear Corporation (CNNC) and the Saudi Geological Survey signed agreements on cooperation on the exploration of uranium.

2018

Crown Prince Mohammed bin Salman signed an MoU with Japan's SoftBank for 150-200 GW of solar capacity by 2030, but the project was aborted six months later.
KA-CARE awarded a contract to Worley Parsons for consultancy services for the Saudi National Atomic Energy Project.

2019

The IAEA delivered the final report of its integrated nuclear infrastructure review (INIR) mission in Saudi Arabia, noting significant progress.
KA-CARE launched a program with the Jordan Atomic Energy Commission (JAEC) and the Jordan Uranium Mining Company (JUMCO) to develop Saudi expertise in uranium exploration and mining.

2021

The country committed to becoming carbon neutral and aims to produce 50% of its electricity from renewables by 2030, with the rest supplied by natural gas.
Saudi Arabia's Nuclear and Radiological Regulatory Commission (NRRC) and the UAE's Federal Authority for Nuclear Regulation (FANR) agreed to cooperate in nuclear and radiation regulatory matters.

2022

Neom launched subsidiary company Enowa for developing its energy and water systems. Saudi Arabia confirmed the establishment of the Nuclear Holding Company, which will act as the country's nuclear developer

2023

The energy minister reiterated the Kingdom's intention to build a nuclear power plant and plans to switch to a comprehensive safeguards agreement with the IAEA.
Energy minister Prince Abdulaziz Bin Salman announced plans to utilize national uranium resources for the whole nuclear fuel cycle, including the production of yellowcake, low enriched uranium, and the manufacturing of nuclear fuel for national use and for export.

Introduction

This article examines the Kingdom of Saudi Arabia's Nuclear Program (SANP) within the framework of its foreign policy and regional geopolitical ambitions. As the Kingdom of Saudi Arabia positions itself as a central player in the Middle Eastern region, its nuclear energy aspirations are analyzed in light of rivalries, especially with the Islamic Republic of Iran, and the broader implications for regional and global stability. The analysis covers the historical development of SANP, strategic partnerships with major powers such as the United States of America and the People's Republic of China, and the nuanced interplay of international nuclear energy non-proliferation treaties. This study also explores the legal and political ramifications of the Kingdom of Saudi Arabia's nuclear energy activities, including the impact of its policies on regional power dynamics and its diplomatic relations with neighboring countries and global powers. By evaluating the motivations behind the Kingdom of Saudi Arabia's nuclear energy ambitions, this report provides insights into the potential shifts in the regional security landscape and the challenges posed to the international non-proliferation regime.

As the geopolitical landscape of the Middle Eastern region continues to evolve, the strategic decisions of its key players significantly influence the regional balance of power. Among these players, the Kingdom of Saudi Arabia's nuclear energy ambitions represent a pivotal element in understanding the kingdom's broader strategic objectives and its place in global politics. This report delves into the intricate dynamics of the Kingdom of Saudi Arabia's Nuclear Program (SANP), exploring its implications not only within the realm of Saudi foreign policy but also in its quest for a prominent role on the international stage. By examining the historical development, strategic partnerships, and legal frameworks surrounding SANP, this analysis sheds light on the motivations behind the Kingdom of Saudi Arabia's nuclear energy pursuits and the potential ramifications for regional stability and international nuclear energy non-proliferation efforts. Through this lens, we can better comprehend how the Kingdom of Saudi Arabia navigates its relationships with global powers and regional adversaries, crafting a nuclear energy strategy that seeks to enhance its security and regional influence.

Safeguards and Other Legal Bindings of Saudi with IAEA

The Kingdom of Saudi Arabia almost did nothing significant from the GCC announcement for a while in the nuclear energy section.[3] It is important to note that the Kingdom of Saudi Arabia joined the NPT in 1988[4], but it had no safeguard agreement with the IAEA in force until 2009.[5] On

[3] (Nuclear Power in Saudi Arabia, 2023)g
[4] (Squassoni, 2018)
[5] (Squassoni, 2018)f

2009, it started to enforce the safeguard agreement, which was already ratified in 2005 but not implemented. This ambiguity is possible and low cost for Saudi because of its good relations with the world powers in energy, financials, global investments, and briefly, a positive balance. That is why an optimistic approach was ongoing about Saudi's delay in agreeing on the safeguard with the agency and then the implementation of it.

Saudi Infrastructure

Saudi tried to open its nuclear energy discussion to the international arena so that it becomes normalized in advance. That is why almost since the beginning of the project, or even before, they announced the founding of a city called King Abdullah City for Atomic and Renewable Energy (King Abdullah City for Atomic and Renewable Energy). As is obvious from the title, the Kingdom of Saudi Arabia didn't isolate its nuclear energy project and introduced it as a package of renewable energies. As investment in nuclear energy industries, especially when it includes enrichment, is introduced as a weird aim for the oil-rich countries without any wish to build a nuclear energy weapon, the Kingdom of Saudi Arabia tried to justify the whole case as an energy basket package to be completed.

Rumors about the People's Republic of China and Saudi Secret Facilities

There are several rumors about the secrecy of Saudi's nuclear energy project, specifically its cooperation with the People's Republic of China.[6] These rumors are mostly because of the Chinese aims to cooperate with Saudi in the nuclear energy segment, which is already declared both by Saudi and the Chinese party. Some claimed that Saudi already has its nuclear energy facilities and the uranium concentrate processing.[7] Postponing the finalization of the safeguard from 1988 to 2005 and putting it in force in 2009, and also not joining the additional protocol[8], which is not compatible with Saudi's behavior in its foreign policy and its relations with international organizations. This incompatibility raises such ideas.

Engaging Different Parties in the Game

Saudi has not been in a hurry with its nuclear energy project. That was why it could engage different parties in its developing nuclear energy project: the the United States of America[9], South

[6] (Al-Madhaji, 2023)e
[7] (Al-Madhaji, 2023)e
[8] (Squassoni, 2018)f
[9] 2008

Korea[10], the People's Republic of China[11], Argentina[12], and alike.[13] Together with Saudi's financial resources, which raise the cooperation will to have a piece of a big cake for each party in advance, reports, positionings, and negotiations created a "network of players and contributors" that logically normalize the entire project.

This may be counter to what happened to the Islamic Republic of Iran's nuclear energy program, which soon has been converted to an issue[14] which is still in the headlines. The Islamic Republic of Iran started not from building a justification narrative in the international arena but from simple technical experiments on its soil, all of which happened at the starting phase very primary as of today capabilities. But due to the lack of any "political preamble" which justifies these measures in all economic, technologic, and political extents, that was why it has changed to an unnecessarily long-lasting issue in its foreign relations that increased its policy costs. The main two players to be the Kingdom of Saudi Arabia's nuclear energy partners are the the United States of America and the People's Republic of China; the United States of America, which is the main but not the only great partner of the Kingdom of Saudi Arabia, has its nuclear energy cooperation policy, the most sensitive article of which is called article 123[15], and the ultimate version of which is called "gold standard".[16] The gold standard is the type of nuclear energy cooperation that the United Arab Emirates has accepted. This standard, which is a specific format of nuclear energy cooperation with foreign countries, prohibits the destination country from enriching uranium as well as other nuclear energy material on its own soil. In return, the the United States of America conveys several other parts of the nuclear energy installations and non-enrichment technologies to this country.

For the governments like the United Arab Emirates, working under such a limitation would be a feasible one to get technologies from the the United States of America or its nuclear energy partners like South Korea that never is possible to achieve by itself. But for a country like the Kingdom of Saudi Arabia, with all its ambitions as a head of the Arab Union or special position in the Islamic world, the story is different. Especially with respect to the competition the Kingdom of Saudi Arabia feels with the Islamic Republic of Iran and the possibilities this country has due to its financial sources as well as balanced established relations with several global and nuclear

[10] 2011
[11] 2012
[12] 2015
[13] (Nuclear Power in Saudi Arabia, 2023)g
[14] (Henderson & Schenker, audi Arabia's Nuclear "Asks": What Do They Want, What Might They Get?, 2023)
[15] (Atomic Enegry Act of 1954)f
[16] signed this on January 15, 2009

energy powers, it seems not that feasible and interesting to have such a cooperation draft like what the United Arab Emirates has called “Gold Standard”.

The option that Saudi can choose is basically the People's Republic of China. The People's Republic of China, with its technological power in nuclear energy industries, can easily offer Saudi a full nuclear energy cycle including enrichment and bypass the the United States of America with all its limitations which are tried to be justified as “non-proliferative effort”; what is not that much believable from the only country which already used nuclear energy weapons in the history of the globe.

Position of the People's Republic of China in This Game with Respect to the Region

The other thing that needs to be considered is that along with the the United States of America' official aim to leave the Middle Eastern region region to some extent and pivot to East Asia, the People's Republic of China is the power which tends to step into this part of the world, a big step of which is to get closer to the Kingdom of Saudi Arabia in various ways. The Kingdom of Saudi Arabia, a regional power and major player among the Islamic states, and the biggest exporter of oil in the world, which is also a close ally to the the United States of America to some extent, could play a key role for the People's Republic of China to put its foot in the region. This shows at the same time a difference in alliance nature in comparison with the Cold War era, which was the time for permanent and comprehensive alliances; the Kingdom of Saudi Arabia can play a perfect positive balance game between different global main powers in the current post-polar world order, which is the era of interim and subject-based alliances.

The Kingdom of Saudi Arabia, looking at the People's Republic of China as a second option along with others like France, South Korea, and Argentina for different aspects of its nuclear energy project, uses it as leverage in its negotiations with the the United States of America. It seems that the first priority of the Kingdom of Saudi Arabia is to have the most modern American nuclear energy technology for the full fuel cycle including enrichment on its own soil. But if not possible, it can be a Chinese version without any similar limitation. That is how the Kingdom of Saudi Arabia presses the the United States of America to change its nuclear energy cooperation policy as per Article 123 for Saudi and make an exception for it, which is not easy.

Situation of the US with Regard to Saudi Nuclear Ambitions: Dilemma with the Islamic Republic of Iran, Israel, and the People's Republic of China

The other sensitive issue that the the United States of America faces in case of giving the full uranium enrichment cycle to the Kingdom of Saudi Arabia is the acceptance of this policy in Tel

Aviv. Israel, the only regime in the Middle Eastern region who already has a nuclear energy arsenal thanks to the Western powers, is very close to its soil, giving uranium enrichment to the Kingdom of Saudi Arabia is again a breach of former policies to always stay advanced against the Arab and Islamic countries implicitly. So, the the United States of America is in a deep dilemma with the local enrichment desire from the Kingdom of Saudi Arabia: all the Islamic Republic of Iran-wise, the People's Republic of China-wise, and Israel-wise. Postponing the issue is the only way the US takes to purchase time over the years. Relations with the Kingdom of Saudi Arabia do not let the the United States of America put pressure more than a certain amount. Not balancing these relations with a similar one with the Islamic Republic of Iran makes Saudi in the position to balance the the United States of America with the People's Republic of China instead.

Dilemma of the Islamic Republic of Iran to Support This Idea or Not

The Islamic Republic of Iran, which didn't take any serious position about the Kingdom of Saudi Arabia's nuclear energy project, is also on a similar dilemma: on one hand, the Kingdom of Saudi Arabia is its main competitor in the Islamic world and a serious regional competitor. This is why the Islamic Republic of Iran logically should not feel relaxed if the Kingdom of Saudi Arabia reaches a domestic nuclear energy industries and enrichment capability in which the Islamic Republic of Iran is the only one in the MENA region; because it breaks the Islamic Republic of Iran's exclusivity and the relative advantage to Saudi; the same reason for which Saudi seeks to have a similar capability to the Islamic Republic of Iran and put its maximum the same limit the Islamic Republic of Iran has. On the other hand, domestic enrichment and having a full nuclear energy fuel cycle from the Islamic Republic of Iran's official position, the absolute right of any NPT member as a part of a peaceful nuclear energy program; what cannot be neglected in a specific case. Establishing such a cycle in the Kingdom of Saudi Arabia also approves the Islamic Republic of Iran's current position, and future challenging of it would be much more difficult for the opponents. Also, it is another weakening source for Israel.

Normalization with Israel

At the end, it is important to note that the Kingdom of Saudi Arabia conditioned any normalization of relations with Israel officially to three items, one of which is receiving the most modern American nuclear energy facilities and full enrichment cycle of fuel on its own soil. The other two are a fair solution for Palestinians, which is a two-state solution from Riyadh's point of view, and a high-level security treaty with the the United States of America.[17] Although the Abraham

[17] (Al-Madhaji, 2023)

Accords are not that much on the table according to the Gaza war, at least for a significant while of time.

Conclusion

the Kingdom of Saudi Arabia's strategic pursuit of nuclear energy capabilities emerges as a multifaceted endeavor, shaped by its regional rivalries, especially with the Islamic Republic of Iran, and its aspirations for enhanced global stature. The Kingdom’s nuclear energy ambitions are not merely an extension of its energy policy but a calculated move within the complex chessboard of Middle Eastern regionern geopolitics. By aligning with powerful nations such as the the United States of America and the People's Republic of China, the Kingdom of Saudi Arabia not only seeks to secure advanced nuclear energy technology but also aims to position itself as a formidable player in the regional balance of power. This pursuit, however, is fraught with challenges and risks, particularly in navigating the intricate web of international nuclear energy non-proliferation norms and the geopolitical interests of other regional actors, including Israel and the Islamic Republic of Iran.

As the Kingdom of Saudi Arabia continues to advance its nuclear energy agenda, it will likely remain a topic of significant international scrutiny and debate. The implications of Saudi nuclear energy capabilities extend beyond regional dynamics, potentially influencing global nuclear energy policy and the future direction of nuclear energy non-proliferation efforts. The Kingdom’s nuclear energy strategy, therefore, must be understood not only in terms of national security and energy independence but also within the broader context of its diplomatic relations and regional ambitions. Ultimately, the Kingdom of Saudi Arabia's nuclear energy trajectory will significantly impact the stability and security architecture of the Middle Eastern region, posing critical questions for international policy and regional diplomacy.

Bibliography

Alberque, W., & Ibraheem, A. (2023). *Saudi Arabia's partner in pursuing civilian nuclear power: China or the US?* IISS. Retrieved November 17, 2023

Al-Madhaji, M. (2023). *Saudi Arabia's Nuclear Ambitions: US Apprehensions and China's Allure.* Wilson Center. Retrieved December 13, 2023, from https://www.wilsoncenter.org/article/saudi-arabias-nuclear-ambitions-us-apprehensions-and-chinas-allure

Borger, J. (2023). *Crown prince confirms Saudi Arabia will seek nuclear arsenal if Iran develops one.* The Guardian. Retrieved September 21, 2023

Convention on Nuclear Safety. (n.d.).

Davenport, K. (2023). *Saudi Push for Enrichment Raises Concerns.* Arms Control Association. Retrieved November 2023

Graham-Harrison, E., Kirchgaessner, S., & Borger, J. (2020). *Revealed: Saudi Arabia may have enough uranium ore to produce nuclear fuel.* The Gaurdian. Retrieved September 17, 2020

Henderson, S. (2023). *Saudi Arabia Signals It Will Accept Stricter Nuclear Inspections.* The Washington Institute for Near Easy Policy, Washington. Retrieved September 26, 2023, from https://www.washingtoninstitute.org/policy-analysis/saudi-arabias-nuclear-asks-what-do-they-want-what-might-they-get

Henderson, S., & Schenker, D. (2023). *audi Arabia's Nuclear "Asks": What Do They Want, What Might They Get?* The Washington Institute for Near East Policy, Washington. Retrieved August 15, 2023, from https://www.washingtoninstitute.org/policy-analysis/saudi-arabias-nuclear-asks-what-do-they-want-what-might-they-get

https://www.govinfo.gov/. (n.d.). Retrieved November 13, 1998, from https://www.govinfo.gov/content/pkg/COMPS-1630/pdf/COMPS-1630.pdf

Kiimballll, D. (2023). *Just Say 'No' to Uranium-Enrichment Cooperation With Saudi Arabia.* Arms Control Association. Retrieved October 2023

Nakano, J. (n.d.). *The Saudi Request for U.S. Nuclear Cooperation and Its Geopolitical Quandaries.* Center for Strategic & International Studies. Retrieved September 7, 2023

(2023). *Nuclear Power in Saudi Arabia.* London: World Nuclear Association.

(2023). *Prospects for U.S.-Saudi Nuclear Energy Cooperation.* Congressional Research Service. Retrieved May 19, 2023, from https://crsreports.congress.gov/

Schneider, T. (2023). *Saudi Arabia could convert civilian nuclear to military, Israeli expert warns.* Times of Israel. Retrieved August 2, 2023, from https://www.timesofisrael.com/saudi-arabia-could-convert-civilian-nuclear-to-military-israeli-expert-warns/

Sohal, S. (2023). *The US Position on Saudi Arabia's Civilian Nuclear Program.* Arab Center Washington DC, Washington DC. Retrieved August 16, 2023

Squassoni, S. (2018). *The Implication of Nuclear Cooperation with Saudi Arabia.* George Washington University, Elliott School of International Affairs, Washington. Retrieved March 21, 2018, from https://docs.house.gov/meetings/FA/FA13/20180321/108057/HHRG-115-FA13-Wstate-SquassoniS-20180321.pdf

Turak, N. (2023). *Saudi Arabia announces crucial step forward in its nascent nuclear power plans.* CNBC. Retrieved September 26, 2023