

A Critical Analysis of the Theory of Cascading  
Nuclear Proliferation in the Middle East

by

Katelyn McDaniel

A Thesis submitted to the Faculty of Graduate Studies of  
The University of Manitoba  
in partial fulfilment of the requirements of the degree of

MASTER OF ARTS

Department of Political Studies

University of Manitoba

Winnipeg

Copyright © 2020 by Katelyn McDaniel

## **Abstract**

This thesis analyzes the theory of cascading nuclear proliferation and the often alluded to notion that if Iran develops nuclear weapon capabilities, it will motivate other nations in the Middle East to likewise proliferate. Through the exploration of why countries seek to acquire nuclear weapons, four main motivating factors are identified- security concerns; internal considerations; external considerations and prestige; and feasibility. These motivations are used as a framework to examine the impact Iranian nuclear weapons could have on regional nuclear ambitions using the case studies of Egypt and Saudi Arabia. Analysis of the impact of Iranian proliferation on both cases indicates that although Iranian proliferation would pose a challenge to both nations, at present it most likely would be an insufficient driver for nuclear proliferation. This research challenges the utility of the theory of cascading nuclear proliferation and suggests that a multifaceted approach to predicting nuclear proliferation would be more useful.

## **Acknowledgement**

I would first like to thank my thesis advisor, Dr. Jim Fergusson, for his guidance and advice both in writing this thesis, and the years he spent educating me during my time at the University of Manitoba that helped me develop the skills necessary to complete this task. His door was always open, and I am very grateful for his insight. I would also like to thank my family, friends, and classmates for their constant support and faith in me. Finally, I thank my husband, Hesham, for reading, helping edit, and advising me on my many drafts. More importantly, I thank him for his endless encouragement and sacrifices that allowed me to complete this thesis.

**Dedication**

*To my family, for encouraging my love and pursuit of knowledge.*

## Table of Contents

<b>List of Acronyms .....</b>	<b>vi</b>
<b>Chapter I: Introduction .....</b>	<b>1</b>
<b>Chapter II: The Four Motivations for Nuclear proliferation .....</b>	<b>11</b>
Background .....	12
Security Concerns.....	15
Internal Considerations .....	24
External Considerations and Prestige .....	27
Economic and Technological Feasibility .....	34
<b>Chapter III: Egypt .....</b>	<b>40</b>
Security Concerns .....	40
Internal Considerations .....	49
External Considerations and Prestige .....	55
Economic and Technological Feasibility .....	61
<b>Chapter IV: Saudi Arabia .....</b>	<b>69</b>
Security Concerns.....	69
Internal Considerations .....	79
External Considerations and Prestige .....	85
Economic and Technological Feasibility .....	91
<b>Chapter V: Conclusion .....</b>	<b>102</b>
<b>Bibliography.....</b>	<b>109</b>

## **List of Acronyms**

AP – Additional Protocol

GCC – Gulf Cooperation Council

IAEA – International Atomic Energy Agency

IDF – Israel Defense Force

IRBM– Intermediate-range ballistic missile

JCPOA– The Joint Comprehensive Plan of Action

KACARE– King Abdullah City for Atomic and Renewable Energy

MENWFZ– Middle East Nuclear Weapon Free Zone

MRBM– Medium-range ballistic missile

NATO– North Atlantic Treaty Organization

NPT– Treaty on the Non-Proliferation of Nuclear Weapons

OPEC– Organization of the Petroleum Exporting Countries

P5– Permanent five (United Nations Security Council)

SQP– Small Quantities Protocol

SRBM– Short-range ballistic missile

UN– United Nations

UNSC– United Nations Security Council

US– United States

WMD– Weapon of mass destruction

## Chapter I

### Introduction

The theory that a country developing nuclear weapons will create a domino effect in other countries is one that is commonly alluded to. In particular, recent concerns have risen over the possibility that if Iran develops nuclear weapons, other nations in the region would also try to attain similar capabilities. By exploring these concerns, developing a framework to understand why nations choose to pursue proliferation, and examining other considerations that may impact this claim, the utility of the theory of cascading nuclear proliferation in the Middle East can be better understood.

Since the first nuclear weapon was created, it has been predicted that the number of nuclear states would multiply. Classical thinking was that nuclear weapons were so powerful that states would be drawn to the security advantages associated with them, especially in cases where rivals had nuclear technology.<sup>1</sup> In 1963 American President Kennedy predicted at a press conference; “I see the possibility in the 1970's of the President of the United States having to face a world in which 15 or 20 or 25 nations may have these weapons. I regard that as the greatest possible danger and hazard.”<sup>2</sup> Over seventy years have passed since the first nuclear weapons were built, yet the number of nuclear states has not exponentially increased, and only a handful of new nuclear powers have emerged with the number of nuclear states not yet reaching double digits.

---

<sup>1</sup> Frank Procida, “Nuclear Dominoes: Real or Imagined?” *International Journal of Intelligence and Counter Intelligence* 23, no. 3 (2010): 462, <https://doi.org/10.1080/08850601003772828>.

<sup>2</sup> John Kennedy, “News Conference 52,” *State Department Auditorium*, March 21, 1963, accessed March 21, 2019, <https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-press-conferences/news-conference-52>.

After each state proliferated, it was predicted that neighboring or animus states would also develop nuclear aspirations. Following China's development of nuclear weapons it was speculated that it would cause a domino effect in Australia, India, Indonesia, Japan, the Philippines, South Korea, and Taiwan.<sup>3</sup> Likewise after France proliferated there were similar estimates that West Germany, Italy, Belgium, Luxembourg, and the Netherlands would follow.<sup>4</sup> Why these states, apart from India, did not decide to follow suit was a result of a number of factors.

Recently there has been fear that if Iran's nuclear program were to become successful it would create a ripple effect in the region and be a motivation for other nations such as Egypt, Saudi Arabia, and Turkey to produce their own nuclear weapons. Within this list, the majority of scholars identify Egypt and Saudi Arabia as the two countries most likely to develop nuclear aspirations.<sup>5</sup> Turkey being a member of the North Atlantic Treaty Organization (NATO) means that it is protected under its collective defence umbrella and already benefits from extended nuclear deterrence making it less likely to proliferate.<sup>6</sup> This is in contrast to Saudi Arabia and Egypt, which both are not formally protected through extended deterrence. The combination of this, their rivalry with Iran, and other motivations which will be discussed in depth in later

---

<sup>3</sup> Nicholas Miller, "Nuclear Dominoes: A Self-Defeating Prophecy?" *Security Studies* 23, no. 1 (2014): 35, <https://doi.org/10.1080/09636412.2014.874189>.

<sup>4</sup> Procida, "Nuclear Dominoes: Real or Imagined?" 463.

<sup>5</sup> Miller, "A Self-Defeating Prophecy?" 37; Gawdat Bahgat, "A Nuclear Arms Race in the Middle East: Myth or Reality?" *Mediterranean Quarterly* 22, no. 1 (2011): 29, <https://doi.org/10.1215/10474552-1189638>; James Lindsay and Ray Takeyh, "After Iran Gets the Bomb," *Foreign Affairs*, 89, no. 2 (2010): 31, <http://uml.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=51433475&site=ehost-live>; and Dalia Kaye and Frederic Wehrey, "A Nuclear Iran: The Reactions of Neighbours," *Survival* 49, no. 2 (2007): 111, <https://doi.org/10.1080/00396330701437777>.

<sup>6</sup> Due to the lesser probability of Turkey being motivated to proliferate as a result of Iranian proliferation, it will not be included as a case study in this paper.



chapters indicate that Egypt and Saudi Arabia might be driven to proliferate as a result of Iranian proliferation.

Historic examples of countries choosing to proliferate, at least in part because of an adversary's decision to proliferate, have occurred. Arguably, concerns over other nations possessing, or potentially possessing, nuclear technology has been the main motivating factor for their proliferation. A quintessential example of such a chain reaction of proliferation can be seen looking at China's impact on India's decision to proliferate, and consequently and subsequently, Pakistan's proliferation.

India started its nuclear program in 1946, just under two decades before China tested its first device. While initially developing its program for energy purposes, at some point its goals shifted: most likely in 1958 when India realised that China was pursuing nuclear capabilities.<sup>7</sup> The 1962 Sino-Indian War both affirmed China's military superiority, and increased tensions between the countries.<sup>8</sup> After China's nuclear test in 1964, the debate over the purpose of India's nuclear program became public with discussions emerging over whether India should also develop nuclear weapons. Later that same year, India decided to develop its own nuclear weapons' technology resulting in India's first test a decade later in 1974, which it preferred to classify as a 'peaceful nuclear explosion.'<sup>9</sup> It was not until May 1998 that India officially weaponized when it tested five nuclear weapons in the Thar Desert in northwest India. Miller stated, "Overall, the Indian case provides clear evidence that Chinese nuclear capabilities played

---

<sup>7</sup> Miller, "A Self-Defeating Prophecy?" 43.

<sup>8</sup> Yogesh Joshi, and Frank O'Donnell, *India and Nuclear Asia: Forces, Doctrine, and Dangers* (Washington: Georgetown University Press, 2019), 81. The Sino-Indian War was a territorial dispute over the Himalayan border regions of Ladakh and Aksai Chin.

<sup>9</sup> Pallava Bagla and Andrew Lawler, "Experts Search for Details After Indian Nuclear Tests," *Science* 280, no. 5367 (1998): 1189, <https://doi.org/10.1126/science.280.5367.1189>.

a key role in motivating the Indian nuclear efforts.”<sup>10</sup> While China was most likely a driver, there were a multitude of further considerations why India decided to develop nuclear weapons including security concerns with Pakistan and its own domestic needs.

During the decade India took to develop its nuclear capabilities, it was faced with pressure to halt its nuclear pursuit. In particular, there was fear that another Asian power with nuclear capabilities would further push proliferation in Asia with speculations that Pakistan would be the most likely to follow. The United States (US) did not offer specific assurances to India while its program was still in its developmental stage, in part because it did not want to jeopardize its relationship with Pakistan, and in part because it wanted the flexibility to decide how to respond without the restraints of a formalized commitment. Likewise, the other nuclear powers were not interested in making bilateral security assurances with India due to the precedent that it would create for other non-nuclear states to also seek out guarantees in exchange for following non-proliferation norms.<sup>11</sup>

On the other hand, more common are the many cases of nations deciding not to proliferate after an unfriendly nation does. Japan, for example, despite its long history of strained relations with China and related security concerns, did not decide to follow China and India’s example. Instead, Japan opted to focus on its robust civil nuclear program, seek security guarantees from the US, and sign the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).<sup>12</sup> This decision to sign and later ratify the NPT was in part due to the perceived security benefits of remaining nuclear free, Japan’s concern over its relationship with the international community, domestic considerations including the population’s abhorrence of nuclear weapons

---

<sup>10</sup> Miller, “A Self-Defeating Prophecy?” 51.

<sup>11</sup> Ibid., 45.

<sup>12</sup> Ibid., 63.

given the memory of the tragic results of the atomic bombs dropped on Hiroshima and Nagasaki, and lobbying from the anti-nuclear peace community and the scientific community that feared the spread of technology and uranium to its civil nuclear program would halt if Japan refrained from signing.<sup>13</sup>

Japan's decision to remain a non-nuclear state appears to have been successful. Japan has the additional advantage of benefiting from the latent deterrence provided from mastering the nuclear fuel cycle and possessing advanced nuclear energy capabilities. It is estimated that Japan could reach breakout capacity, the amount of time it would take to produce enough fissile material for one nuclear weapon, in as little time as a few weeks to months. This allows Japan to bypass some of the negative ramifications of proliferation while still having some level of protection.<sup>14</sup>

Israel's proliferation demonstrates another example of a nation failing to drive an adversary to develop nuclear weapons. While Israel has maintained a status of nuclear ambiguity, it is no secret that it possesses nuclear capabilities and estimates are that it has at least eighty nuclear warheads.<sup>15</sup> While no country successfully tested a nuclear weapon in response, Israel's proliferation was a further motivation for Egypt, Iran, Iraq, Syria, and Saudi Arabia to consider building nuclear weapons.<sup>16</sup> These considerations never materialised into nuclear

---

<sup>13</sup> B.M Kaushik, "Japan Ratifies NPT," *China Report* 12, no. 3 (1976): 8, <https://doi.org/10.1177/000944557601200302>.

<sup>14</sup> Lauren Sukin, "Beyond Iran: Containing Nuclear Development in the Middle East," *Nonproliferation Review* 22, no. 3-4 (2015): 380, <https://doi.org/10.1080/10736700.2016.1152010>.

<sup>15</sup> Hans Kristensen and Matt Korda, "Status of World Nuclear Forces," Federation of American Scientists, last modified April 2019, "<https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces>."

<sup>16</sup> Miller, "A Self-Defeating Prophecy?" 70; and Gawdat Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, (Gainesville: University Press Florida, 2007), 56. Iraq's attempts to proliferate were hindered in 1981 when Israel bombed Iraq's Osirak nuclear facility.

weapons and over the past half century it has not sparked any of its regional adversaries to proliferate, including Egypt, which has been at war with Israel four times.<sup>17</sup>

Since the mid 1980s, the US, Israel, and other western powers have accused Iran of attempting to build nuclear weapons.<sup>18</sup> At that time, Iran could have desired nuclear capabilities to show prominence in the region and to have a strong tool of deterrence against Saddam Hussein's Iraq, the US, and Israel. Iran has adamantly denied that it is pursuing weaponization and insists that its nuclear program and technology are for energy and peaceful purposes only.

Its program was created in 1957, followed a decade later by the establishment of the Tehran Nuclear Research Center at Tehran University which housed a 5-megawatt nuclear research reactor fuelled by uranium sold from an American company.<sup>19</sup> In 1968, Iran signed the NPT and ratified it in 1970 making Iran's nuclear program subject to the International Atomic Energy Agency's (IAEA) verification and inspection protocols.<sup>20</sup> With most of its technology coming from abroad, the Shah established the Atomic Energy Organization of Iran in 1974 with the goal of developing indigenous nuclear technology.<sup>21</sup> The Iranian Revolution in 1979 created some major roadblocks for Iran's nuclear program, but efforts were resumed by the new Islamic revolutionary government in the 1980s with support from Beijing and Moscow.<sup>22</sup> In 2002, it was discovered that Iran had a secret enrichment facility in Natanz and a heavy-water production facility in Arak which were hidden from the IAEA. Later in 2009, another secret Iranian enrichment facility in Fordow was discovered.

---

<sup>17</sup> Lindsay and Takeyh, "After Iran Gets the Bomb," 39.

<sup>18</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 19.

<sup>19</sup> Ibid., 20.

<sup>20</sup> Ibid., 21.

<sup>21</sup> Ibid., 21.

<sup>22</sup> Ibid., 22.

Uneasy about the prospect of Iran proliferating, negotiations began between the five permanent members (P5) of the United Nations Security Council (UNSC), Germany, and Iran. The aim of the negotiations was to create a deal with Iran that would offer it incentives in exchange for monitoring and reducing its nuclear program. In July 2015, the Joint Comprehensive Plan of Action (JCPOA) was reached.<sup>23</sup> Before the JCPOA, some estimated Iran's breakout time could be as short as a couple of months. After the JCPOA was reached in 2015, estimates were that Iran's breakout time would be over 12 months if it continued to abide by the restrictions outlined in the deal.<sup>24</sup> If Iran reached breakout capacity, there would still be several additional steps needed to create a functioning nuclear weapon including, "designing and constructing an explosive device and integrating it into a delivery system."<sup>25</sup> Estimates of the time it would take Iran to reach breakout capacity and complete a nuclear weapon vary and continue to change, but it appears that Iran could feasibly produce nuclear weapons in a relatively short period of time if it desired.

Some, including many within the Republican Party, have been critical of the JCPOA. The main criticisms of the deal have been that it is not stringent enough, and that it contains sunset provisions that allow certain restrictions to ease after specified periods of time. Critics argue that in as little as 15 years into the deal, Iran could begin stockpiling enriched uranium and continue its pursuit of nuclear weapons.<sup>26</sup> In 2018, President Donald Trump announced that the United

---

<sup>23</sup> U.S. Department of State, "Joint Comprehensive Plan of Action," July 14, 2015, <https://2009-2017.state.gov/documents/organization/245317.pdf>.

<sup>24</sup> Kelsey Davenport and Julia Masterson, "The Limits of Breakout Estimates in Assessing Iran's Nuclear Program," Arms Control Association 12, no. 6, August 4, 2020, <https://www.armscontrol.org/issue-briefs/2020-08/limits-breakout-estimates-assessing-irans-nuclear-program>.

<sup>25</sup> Ibid.

<sup>26</sup> Mark Fitzpatrick, "Assessing the JCPOA," in *Adelphi Series: Uncertain Future: The JCPOA and Iran's nuclear and missile programmes*, by Mark Fitzpatrick, Michael Elleman and Paulina Izewicz, 57, no. 466-467 (2017): 33, <https://doi.org/10.1080/19445571.2017.155591433>.

States was pulling out of the deal and reinstating sanctions. This was a major hit to the JCPOA, and in response Iran began exceeding some of the limitations set within the agreement.<sup>27</sup> With the future of the JCPOA unknown, discussions on the probability of Iran proliferating have resurged.

The idea of Iranian nuclear weapons has evoked concern in many neighbouring nations with fears varying from apprehension over possible nuclear attacks and accidents, to concerns about how it would change regional dynamics and affect the security and political positions of nations in the Middle East. Iran's nuclear endeavours have shaped its foreign relations since their discovery.<sup>28</sup> Iranian proliferation would, without a doubt, change regional dynamics, but it is still speculation whether or not it would be enough of a driver to create a cascade in the region.

The theory that other nations in the Middle East would develop nuclear weapons programs because of Iranian proliferation is contingent on the assumption that Iran proliferating would be a significant enough threat for other countries to decide that despite the negative ramifications they would face, attaining the same weapons would be in their best interest. Understanding the motivations of why countries seek to acquire nuclear weapons can facilitate a better understanding of the extent to which an adversary developing nuclear weapons, and in this case Iran, would cause a cascade of proliferation. While academics have identified a range of factors that explain such a decision, four common factors identified by most scholars are security concerns; internal considerations; external considerations and prestige; and economic and

---

<sup>27</sup> Nuclear Threat Initiative, "Iran," last modified June 2020, <https://www.nti.org/learn/countries/iran/nuclear>. In 2019 and 2020, Iran exceeded the agreed upon uranium enrichment limit of 3.67% uranium-235. However, it has not enriched past 5% which is significantly lower the IAEA definition of highly enriched uranium (20%) and well below weapons-grade (90%).

<sup>28</sup> Lindsay and Takeyh, "After Iran Gets the Bomb," 36.

technological feasibility which will be discussed in detail in the next chapter.<sup>29</sup> As the literature points to both Egypt and Saudi Arabia as the two most likely nations to proliferate, the utility of this theory can be explored by examining the impact of Iranian nuclear weapons development on the four main motivations for proliferation in both countries.

While it is commonly speculated that if Iran developed nuclear weapons it would spark other states in the Middle East to follow a similar path, the decision for a nation to proliferate is multifaceted. Many factors including the role of the NPT, extended deterrence, and a country's other motivations for proliferation must also be considered. Using existing research exploring the factors contributing to nuclear proliferation and combining it with research on the situations in Egypt and Saudi Arabia, the framework of the main motivations can provide insight into whether Iranian proliferation would be enough of a driver to cause other nations to seek to acquire nuclear weapons.

The following chapters explore this presumption and its utility. The second chapter is an exploration of the motivations for why countries may choose to proliferate based on their security concerns; internal considerations; external considerations and prestige; and technological and economic feasibility. These four motivations will form a framework to explain the impact Iranian proliferation may have on other nations in the region.

The next two chapters examine two case studies, Egypt and Saudi Arabia respectively, using the framework developed in chapter two to explore their possible challenges and gains

---

<sup>29</sup> Bahgat, "A Nuclear Arms Race in the Middle East: Myth or Reality?"; Sico van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons: Four Factors of Influence," *Journal of Military and Strategic Studies* 17, no. 1 (2016), <https://jmss.org/article/view/58151/pdf>; Scott Sagan, "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security* 21, no. 3 (1996), <https://doi.org/10.2307/2539273>; and Joseph Cirincione, *Bomb Scare: The History and Future of Nuclear Weapons* (New York: Columbia University Press, 2007).

from attempting to develop nuclear weapon capabilities in the case of Iranian nuclear proliferation. This examination explores considerations about their security concerns, internal and external considerations, and feasibility.

The case study on Egypt highlights the conflicting outcomes that would result from Egypt developing nuclear weapons. The chapter notes that Egypt would benefit from nuclear proliferation due to the increased security advantages it would gain from possessing such powerful weapons and that Egypt could feel increased pride and prestige as a result. It also notes that it has neither the economic nor the technological base to build a nuclear weapons program and that Egypt's economy relies on its relationships with other countries. Furthermore, Egypt has recently been focused on domestic politics and it is likely that Egypt would not want to jeopardize its domestic stability and face the negative security risks that would result from proliferation.

The chapter on Saudi Arabia similarly notes that although there are factors that suggest both restraint and proliferation, overall, there is insufficient evidence that Iran possessing nuclear weapons would be a sufficient driver. In particular, this case study illustrates that while Saudi Arabia may be able to get around the issues of feasibility and domestic politics, it would still face significant hurdles. Moreover, while there are security advantages associated with owning nuclear weapons, the negative ramifications may outweigh the benefits.

The final chapter is a conclusion of the analysis. Findings from the two case studies indicate that while both nations would be negatively impacted by Iranian nuclear proliferation, that by itself it is likely to be an insufficient driver. Instead, the idea proposed is that in order for Iran to spark a cascade of nuclear proliferation either all four motivations for proliferation must be in place, or the nation must experience an existential crisis.



## Chapter II

### The Four Motivations for Nuclear Proliferation

While possessing nuclear weapons is arguably seen as advantageous to a state, not all non-nuclear states see it in their best interest to pursue this capability. The academic community has put considerable thought and attention into identifying which factors might cause a country to decide to develop nuclear weapons, but there are still differing views. Although overall the same basic categories are often explored, the emphasis on each of these categories depends a large part on the political ideology of the person examining it. Academics including Gawdat Bahgat, Sico van der Meer, Scott Sagan, and Joseph Cirincione have all developed their own lists of three to five factors that explain why states wish to build nuclear weapons.<sup>30</sup> Building on and synthesising their work, the following four key factors can be identified and used as a framework to understand the motivations for nuclear proliferation: security concerns; internal considerations; external considerations and prestige; and economic and technological feasibility.

This chapter begins by exploring the history of nuclear proliferation to develop a foundational understanding of nuclear proliferation norms. The remaining sections in this chapter examine these four motivations for nuclear proliferation in turn to reveal why some countries, both in the Middle East and elsewhere, may be motivated to pursue the development of nuclear weapons. The motivations of nuclear proliferation explored in this chapter build a framework that is later applied to the case studies of Egypt and Saudi Arabia in the following two chapters.

---

<sup>30</sup> Bahgat, “A Nuclear Arms Race in the Middle East: Myth or Reality?”; Van der Meer, “States’ Motivations to Acquire or Forgo Nuclear Weapons,”; Sagan, “Why Do States Build Nuclear Weapons?”; and Cirincione, *Bomb Scare*.

While each of the four categories has distinct characteristics, due to the intersectional nature of the topics explored, there are elements that blend into each other and could be classified under multiple of the motivations. To avoid redundancy, subjects that apply to more than one category have been allocated to the most relevant category. These separations should not be viewed as absolute, and in many cases the lines between the categories are blurred. Nevertheless, the categories can still be a useful tool to frame the analysis.

## **Background of Nuclear Proliferation**

After the US initiated the first nuclear weapon test, Trinity, in New Mexico on July 16, 1945, in which the ‘Fat Man’ device was detonated, there has been a global fascination with the great power of nuclear weapons.<sup>31</sup> Less than a month later, on August 6 and 9, 1945, the world was faced with the first and only use of nuclear weapons when the two atomic bombs, ‘Little Boy’ and ‘Fat Man,’ were used on Hiroshima and Nagasaki respectively. The emergence of this new weapon capable of destroying cities and killing hundreds of thousands demonstrated to the world the value of nuclear weapons and made their development an aspiration. While the Soviet Union was making initial efforts to create its own atomic bomb alongside America’s Manhattan Project, it was not until its first use that the Soviet Union understood the significance and accelerated its efforts. Although behind the US by about four years, on August 29, 1949, the Soviet Union successfully tested a nuclear weapon in Kazakhstan.<sup>32</sup>

It subsequently became apparent that nations with civil nuclear capabilities could use the same technology and material as the foundation for weaponization, and while there are now

---

<sup>31</sup> David Blades and Joseph Siracusa, *A History of U.S. Nuclear Testing and Its Influence on Nuclear Thought, 1945–1963* (Lanham, Maryland: Rowman & Littlefield Publishers, 2014), 2.

<sup>32</sup> Cirincione, *Bomb Scare*, 19.

safeguards against this, it is still a pressing concern to many. Initial discussions about creating a governing body to deal with this issue and allow states to pursue nuclear technology for peaceful purposes, while creating safeguards to ensure that these efforts were not used for weapons development began in 1946.<sup>33</sup> In 1953, there was a push by the US government when President Dwight Eisenhower brought forward the Atoms for Peace proposal, in which he suggested the creation of an international atomic energy agency under the guidance of the United Nations (UN) which would monitor and, "...devise methods whereby this fissionable material would be allocated to serve the peaceful pursuits of mankind."<sup>34</sup> Following many of the suggestions in the Atoms for Peace proposal, the IAEA was created in 1957. Article II of the IAEA Statute states its objectives: "the Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose."<sup>35</sup>

After the creation of the IAEA, there was a further international push to create and ratify a specific treaty to limit nuclear proliferation. In 1961 a resolution by Ireland "calling on all states to conclude an international agreement that would ban the acquisition and transfer of nuclear weapons" was approved by the UN.<sup>36</sup> A group of 18 countries, the Eighteen Nations Disarmament Committee, met in 1965 to discuss and formalize the specifics of the treaty. In 1968, the NPT opened for signature and entered into force in 1970. A total of 191 countries have

---

<sup>33</sup> The United Nations, "History of the Treaty," in *Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons* (2015), 1, <https://www.un.org/disarmament/wmd/nuclear/npt/>.

<sup>34</sup> Dwight Eisenhower, "Atoms for Peace Address Before the General Assembly of the United Nations on Peaceful Uses of Atomic Energy," (1953), 6, <https://www.iaea.org/about/history/atoms-for-peace-speechEisenhower>.

<sup>35</sup> International Atomic Energy Agency, "International Energy Agency Statute," (1956), amended 1989, Article II, 5, <https://www.iaea.org/about/statute>.

<sup>36</sup> Peter Pella, *The Midlife Crisis of the Nuclear Nonproliferation Treaty* (San Rafael: Morgan & Claypool Publishers, 2016), 39.

since signed or become a party to the treaty with a few notable exceptions including, Israel, India, Pakistan, and North Korea, which was formerly a party to the treaty but later withdrew.

The NPT was developed to recognize the duties and responsibilities of both nuclear-weapon and non-nuclear-weapon states. As defined in Article IX of the NPT, a nuclear-weapon state is one which manufactured and exploded a nuclear weapon or device before January 1, 1967.<sup>37</sup> As such, the only nuclear-weapon states recognized in the NPT are the US, the Soviet Union (now Russia), the United Kingdom, France, and China. Conversely, this means that the other nuclear states including Israel, India, Pakistan, and North Korea are not recognized as nuclear states according to the treaty.

The NPT is an important foundation for the non-proliferation regime, but it does face significant criticisms. One of the main concerns is that it encourages the sharing of nuclear technology for peaceful means in exchange for following certain restrictions. The fear is that non-nuclear powers could develop nuclear energy programs that could provide these nations with the technological and material base to shift their civil program into a military one.<sup>38</sup> While this is just one path a nation could take towards proliferation, it has renewed discussions about reforms to the non-proliferation regime and the importance of understanding why some nations decide to develop nuclear weapons.

---

<sup>37</sup> The United Nations, "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," (1968), Article IX, <https://www.un.org/disarmament/wmd/nuclear/npt>.

<sup>38</sup> Sagan, "Why Do States Build Nuclear Weapons?" 54.

### *Security Concerns*

Nuclear weapons are the strongest kind of weapon a state can have, and therefore it is thought that possessing them would be the best way for a nation to protect itself and its interests. Nuclear weapons have many security advantages and can be used for deterrence, compellence, or offensive means.<sup>39</sup> The path to nuclear weapons development can be very difficult and attempting to proliferate can create its own security dilemma. These advantages and disadvantages must be viewed alongside each other for a nation to make a comprehensive decision regarding whether nuclear proliferation would be in its security interests.

States building nuclear weapons programs often claim deterrence as the most common rationale. The objective is to deter a rival that has nuclear abilities or to deter an enemy with a superior conventional force that the nation feels it could dissuade from attacking by possessing nuclear weapons. As Van der Meer stated, “Any adversary state will think twice before it will attempt to harm the state in question in any way, because this may ultimately result in the nuclear destruction of this adversary itself.”<sup>40</sup> The expectation is that having nuclear weapons would discourage other countries from intervening in its affairs and deter them from both conventional and nuclear attacks through the threat of nuclear retaliation or pre-emptive attack. The exact extent that a nuclear weapon would deter a conventional attack is not always clear, but it is believed to be a strong enough motivation to be an impetus to develop a nuclear weapons program.

---

<sup>39</sup> While similar, deterrence and compellence have important conceptual differences. Deterrence is the attempt to dissuade an opponent from performing an action, in this context, a nuclear attack. Compellence is when an opponent is pressured to change their behaviour or perform an action.

<sup>40</sup> Van der Meer, “States’ Motivations to Acquire or Forgo Nuclear Weapons,” 215.

Bahgat, in reference to what he considers a realist view, argues: “Realists cite Soviet Union-United States, China-United States, India-China, and Pakistan-India as examples where the former pursued nuclear weapons in response to an adversary’s acquisition of these weapons.”<sup>41</sup> If an adversary gains this advantage, it would be natural for a country to feel it must match its adversary’s new military capabilities as, in certain circumstances, it could be a matter of survival. This explanation is concerning for many as this is where the fear of proliferation is rooted. The concept that another state has a very powerful weapon that could be used against one’s country at any time without any means to block the attack alone can be seen as sufficient motivation to want to join the nuclear weapons club.<sup>42</sup>

Besides trying to eliminate the potential for an attack, nuclear weapons can also be used to compel the actions of other nations in a way that would improve a country’s position and meet its objectives.<sup>43</sup> This may be simply to enhance a nation’s prominence in its region and extend its influence in other areas by becoming a dominant power. Or, it can be used more coercively in an aggressive attempt to change another nation’s behaviour to suit its interests.<sup>44</sup> Either way nuclear weapons are a powerful tool that a nation can use to extend its political objectives.

Finally, states may decide to pursue the development of nuclear weapons for the purpose of merely having this capability in their toolbox in case a potential adversary emerges. Within realist ideology, the state’s primary concern is looking out for itself and in this context, that could mean gaining nuclear weapons for the sake of maximizing the power of the military and

---

<sup>41</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 8.

<sup>42</sup> Cirincione, *Bomb Scare*, 51.

<sup>43</sup> Uriel Abulof, “Revisiting Iran’s Nuclear Rationales,” *International Politics* 51, no. 3 (2014): 407, <https://doi.org/10.1057/ip.2014.9>.

<sup>44</sup> In some cases, the threat of the use of nuclear weapons is used as ‘nuclear blackmail’ against an adversary to reach an objective. This term is often used in reference to Cold War nuclear policy and was revived by former American President George Bush in reference to countries such as Iraq gaining nuclear weapons and using them to force their objectives on other countries.

thus increasing the nation's security.<sup>45</sup> Furthermore, it may be possible that the nation has outright offensive objectives against an enemy that could be obtained by using nuclear weapons.<sup>46</sup>

In the context of the Middle East, there are two issues that have dominated regional security concerns over the last half a decade. The first is the Arab-Israeli conflict, which has been a security consideration for several states and territories most notably Egypt, Lebanon, Syria, and the Palestinian territories as they have all faced territorial disputes with Israel. These security concerns are amplified as it is widely assumed that Israel possesses nuclear weapons leading to an unbalanced security situation. Developing nuclear capabilities might be a solution for countries interested in remedying this imbalance and their sense of insecurity.<sup>47</sup>

The second major security concern is instability in the Persian Gulf, which could be seen as a motivation for countries to gain a military advantage by developing nuclear weapons. The weapons could then be used to try to improve their security situation by acting as a block to conventional conflicts, to increase regional stability, or to try to coerce an enemy into bending to their interests.<sup>48</sup> An additional motivation for proliferation in the Middle East could be the prevalence of Western, and in particular American, military intervention. From the 1991 Gulf War onward, there has been a consistent Western military presence in the Middle East and some nations may feel that it would prevent the West from meddling in their affairs, or pushing for regime change if they had nuclear weapon capabilities.<sup>49</sup>

---

<sup>45</sup> Cirincione, *Bomb Scare*, 51.

<sup>46</sup> Clifton Sherrill, "Why Iran Wants the Bomb and What it Means for US Policy," *The Nonproliferation Review* 19, no. 1 (2012): 35, <https://doi.org/10.1080/10736700.2012.655084>.

<sup>47</sup> Bahgat, "A Nuclear Arms Race in the Middle East: Myth or Reality?" 30.

<sup>48</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 8.

<sup>49</sup> *Ibid.*, 9.

This raises the important question as to why some countries that have security threats do not pursue nuclear weapons.<sup>50</sup> The number of countries with pressing external security problems are not equivalent to the number of countries that have, or are actively pursuing, nuclear weapon capabilities. Nuclear weapon capabilities are usually seen as increasing a country's security, but it is possible that they could have the reverse effect. Depending on the country, these negative implications will vary. Focusing on a nuclear program can drain a country of its economic resources leaving vulnerabilities in other areas that are not being allocated the same amount of resources, make it a target for pre-emptive attacks on its nuclear programs and thus become a justification for external intervention, be a cause of distrust and tension with other nations, and could influence other countries to reconsider their own nuclear aspirations.<sup>51</sup> This includes the idea that if a state acquires nuclear weapons to meet a security threat, conventional or nuclear, it would provide sufficient motivation for a non-nuclear adversary to attempt to produce its own nuclear weapons and create a chain reaction of proliferation. For this reason, some states have decided they are more secure without nuclear weapons, as it could also increase the probability that others in the region would remain without them. Fear of this phenomenon is one reason why the nuclear non-proliferation regime and NPT continue to play an important role as a reassurance function in nuclear decision-making.<sup>52</sup>

A number of countries, such as Germany and Japan, possess a latent strategy of nuclear hedging where they create a degree of latent nuclear power through possessing sophisticated nuclear programs, but have never weaponized.<sup>53</sup> Vipin Narang explains how this theory could be

---

<sup>50</sup> Sagan, "Why Do States Build Nuclear Weapons?" 63.

<sup>51</sup> Van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons," 215.

<sup>52</sup> Cirincione, *Bomb Scare*, 54.

<sup>53</sup> Wyn Bowen and Matthew Moran, "Living with Nuclear Hedging: The Implications of Iran's Nuclear Strategy," *International Affairs* 91, no. 4 (2015): 698, <https://doi.org/10.1111/1468-2346.12337>. Other nations such as Canada, Switzerland, and South Korea could also be considered to be following a variation of nuclear hedging.



used to develop nuclear weapon technology, and also why sometimes it does not result in the building of nuclear weapons. Using the example of Japan, he identifies some of the security threats to Japan and how it uses its almost nuclear status to its advantage by using the threat of proliferation as motivation for more protection. He states:

It [Japan] faces underlying security threats from a nuclear-armed China and North Korea, but has a formal alliance with the United States and is protected under its nuclear umbrella. Japan thus uses the implicit threat of breakout with its insurance hedge to elicit stronger security commitments from the United States while putting itself in a position to develop an independent nuclear deterrent should it ever face abandonment.<sup>54</sup>

This argument claims that there are benefits from merely possessing the capability to create nuclear weapons and explains why some nations may find it advantageous not to develop nuclear weapons, even though they have the ability.

Another explanation for why states that are able to proliferate do not, is that instead of becoming nuclear states themselves, non-nuclear powers will instead try to become protected by a nuclear power. Non-nuclear states seek out both positive and negative security assurances. The former is when a nation seeks out protection from a nuclear state in the form of security guarantees to protect them in the event of a threat or attack, and the latter is when a nuclear power promises not to use its nuclear weapons against a non-nuclear state.<sup>55</sup> There are situations in which security assurances, rather than nuclear weapons, are desired as outlined by Sagan:

First, strong states do what they can: they can pursue a form of internal balancing by adopting the costly, but self-sufficient, policy of developing their own nuclear weapons. Second, weak states do what they must: they can join a balancing alliance with a nuclear power, utilizing a promise of nuclear retaliation by that ally as a means of extended deterrence. For such states, acquiring a nuclear ally may be the only option available, but the policy inevitably raises questions about the credibility of extended deterrence

---

<sup>54</sup> Vipin Narang, "Strategies of Nuclear Proliferation: How States Pursue the Bomb," *International Security* 41, no. 3 (2017): 128, [https://doi.org/10.1162/ISEC\\_a\\_00268](https://doi.org/10.1162/ISEC_a_00268).

<sup>55</sup> Jeffrey Knopf, *Security Assurances and Nuclear Nonproliferation* (Stanford: Stanford University Press, 2012), 1.

guarantees, since the nuclear power would also fear retaliation if it responded to an attack on its ally.<sup>56</sup>

One such way the US in particular has accomplished this is through extending security guarantees to countries including South Korea, Japan, Australia, and the NATO signatories.<sup>57</sup> Through joint military alliances or bilateral agreements, the US offers extended deterrence to these nations.<sup>58</sup> While this is a strategy to protect US security interests, it can also be used as a non-proliferation tool as there is the expectation that if a country is under the protection of America's nuclear umbrella, it would have no need for an indigenous nuclear program.

Through NATO's nuclear weapons sharing agreement, the US has housed some of its nuclear weapons in Europe.<sup>59</sup> After the Soviet Union successfully launched Sputnik, NATO created the first joint formal nuclear arrangement in 1957 and the number of US nuclear weapons housed in Europe quickly grew "numbering in the thousands by 1960."<sup>60</sup> Currently, the US still has approximately 150 tactical nuclear bombs, mostly B61s, in Turkey, Italy, Belgium, Germany and the Netherlands as a way to ensure extended deterrence in Europe and to protect NATO from the East.<sup>61</sup>

---

<sup>56</sup> Ibid., 57.

<sup>57</sup> Karl-Heinz Kamp and Robertus Remkes, "Options for NATO Nuclear Sharing Arrangements," in *Reducing Nuclear Risks in Europe: A Framework for Action*, ed. Steve Andreasen and Isabelle Williams (Washington, DC: Nuclear Threat Initiative, 2011), 89, [https://media.nti.org/pdfs/NTI\\_Framework\\_full\\_report.pdf](https://media.nti.org/pdfs/NTI_Framework_full_report.pdf).

<sup>58</sup> Emily Saunders, and Bryan Fearey, "The Least Bad Option? Extending the Nuclear Umbrella to the Middle East," *Comparative Strategy* 33, no. 2 (2014): 123, <https://doi.org/10.1080/01495933.2014.897117>.

<sup>59</sup> Under this arrangement, US owned nuclear weapons have been stored in storage sites within the territories of European members of NATO. These countries each maintain an air force unit that has dual capability aircrafts (Belgian, Dutch, and Turkish F-16s, and German and Italian PA-200 Tornados) and pilots that could be deployed to conduct NATO nuclear missions.

<sup>60</sup> William Alberque, "The NPT and the Origins of NATO's Nuclear Sharing Arrangements," *IFRI Proliferation Papers*, no.57 (2017): 15, [https://www.ifri.org/sites/default/files/atoms/files/alberque\\_npt\\_origins\\_nato\\_nuclear\\_2017.pdf](https://www.ifri.org/sites/default/files/atoms/files/alberque_npt_origins_nato_nuclear_2017.pdf).

<sup>61</sup> Hans Kristensen and Matt Korda, "United States Nuclear Forces, 2019," *Bulletin of the Atomic Scientists* 75 no. 3 (2019): 124, <https://doi.org/10.1080/00963402.2019.1606503>.

In Asia, one of the concerns about the development of North Korean nuclear weapons was that it could motivate South Korea or Japan to proliferate. After creating a formal commitment through the 1953 U.S.-Republic of Korea Mutual Defense Treaty, in 1958 the US deployed some of its nuclear weapons in Korea.<sup>62</sup> While these nuclear weapons were removed during the 1990s, the US has continued its bilateral commitments to extended deterrence without housing its nuclear weapons in Asia.<sup>63</sup> These commitments have regularly been reaffirmed, most recently in 2019 when: “the Secretary [U.S. Secretary of Defense, Mark Esper] reaffirmed the continued U.S. commitment to provide extended deterrence to the ROK using the full range of military capabilities, including U.S. nuclear, conventional, and missile defense capabilities.”<sup>64</sup> The US continuing to provide security assurances may thus be a major reason why neither nation has proliferated in light of their close proximity to both China and North Korea.

Likewise, the US could expand this strategy to the Middle East by making a bilateral security agreement with a nation that they felt was on the verge of proliferating. A security agreement could be used as a tool to stifle proliferation in the region and prevent a domino effect. This way the US could provide countries such as Egypt and Saudi Arabia security assurances and reduce the likelihood that they would resort to nuclear weapon development as a deterrent against Iran.

Changing dynamics in the Middle East have posed a challenge to the way the US approaches extended deterrence, and as a result, it may need to reassess the way it both uses its

---

<sup>62</sup> Avalon Project at Yale Law School, "Mutual Defense Treaty Between the United States and the Republic of Korea, October 1, 1953," Lillian Goldman Law Library, accessed August 21, 2020, [https://avalon.law.yale.edu/20th\\_century/kor001.asp](https://avalon.law.yale.edu/20th_century/kor001.asp).

<sup>63</sup> Kamp and Remkes, "Options for NATO Nuclear Sharing," 89.

<sup>64</sup> U.S. Department of Defense, "Joint Communiqué of the 51<sup>st</sup> ROK-U.S. Security Consultative Meeting," Washington, D.C., November 16, 2019, <https://www.defense.gov/Newsroom/Releases/Release/Article/2018651/joint-communicu-of-the-51st-rok-us-security-consultative-meeting>.

nuclear abilities as a tool of deterrence against enemies, and as an assurance for its friends.<sup>65</sup> The US umbrella has been given credit for slowing proliferation, but the extent of its usefulness and effectiveness is still debatable. Procida challenged the notion that America's security umbrella is a strong assurance: "Frankly, the US umbrella was always a bluff waiting to be called, and history reveals that many policymakers in key countries did indeed begin to doubt the sanctity of US promises as the states of potential confrontation with the Soviet Union became clear."<sup>66</sup> A promise of protection is not equivalent to having complete autonomy over the power of a nuclear weapon. Additionally, while this could offer some degree of security assurance, it would not influence other aspects of motivations for proliferation such as the prestige related to being a nuclear power.

An alternative suggestion has been to develop a Middle East Nuclear Weapon Free Zone (MENWFZ) to try to make the military balance in the region more symmetrical. This option poses numerous challenges, as it is extremely unlikely that Israel would be willing to give up its nuclear capabilities, nor that the other nations would agree to a MENWFZ that gave exception to Israel.<sup>67</sup> Instead, it is possible that the creation of a regional alliance network, perhaps following the framework of the now-dismantled Central Treaty Organization, could offer an alternative way to add security and reduce the security need for nuclear weapons.<sup>68</sup> Lindsey and Takeyh argued "An alliance of this kind would secure all the benefits of a regionwide commitment to deterrence without exposing the United States and its allies to the complexities of formal

---

<sup>65</sup> Güney, "Is the Nuclear Cascade Story in the Middle East Real?" 45.

<sup>66</sup> Procida, "Nuclear Dominoes: Real or Imagined?" 468.

<sup>67</sup> Gawdat Bahgat, "A Mideast Nuclear-Weapons-Free Zone: Pie in the Sky," *Middle East Policy* 22, no. 3 (2015): 34, <https://doi.org/10.1111/mepo.12140>.

<sup>68</sup> The Baghdad Pact was formed in 1955 as a defensive agreement between Great Britain, Iran, Iraq, Pakistan and Turkey. In 1959 Iraq pulled out, and the organization was renamed The Central Treaty Organization (CENTO). The pact was criticized for its failure to provide the means of guaranteeing collective defence and over its lack of a permanent military command structure. CENTO was dismantled after the Iranian Revolution in 1979.

bilateral or multilateral security treaties.”<sup>69</sup> The use of extended deterrence, the creation of a MENWFZ, or the development of an new regional alliance are pertinent factors that may dissuade a nation from proliferating, but represent only a part of the combination of factors that typically are involved in the decision-making process.

Positive security assurances and extended nuclear deterrence make it less critical for a country to build its own capabilities as it is already protected under another nation’s weapons. Through these assurances, a country could avoid some of the negative ramifications and risks of proliferation including the escalation of conflicts, the risk of pre-emptive attack, the economic hardship related to developing a nuclear arsenal, potential sanctions, and the negative international stigma associated with going against international non-proliferation norms.<sup>70</sup> While this solution does cut out risks associated with developing indigenous nuclear capabilities, it is possible that in the case of a conflict that extended deterrence is not seen as credible and an enemy could attack regardless. Moreover, the nuclear power could potentially back down and not provide their protection in attempt to protect their own population. As Cirincione wondered, “Would the president of the United States risk Washington to protect my capital city?”<sup>71</sup> The answer could very well be no, especially if the adversary was capable of directly threatening the US. For this reason, even if a nation is protected by extended deterrence, it may still choose to develop its own nuclear weapons for security reasons.

---

<sup>69</sup> Lindsey and Takeyh, “After Iran Gets the Bomb,” 48.

<sup>70</sup> See page 29 for further analysis of nuclear non-proliferation norms.

<sup>71</sup> Cirincione, *Bomb Scare*, 54.

### ***Internal Considerations***

It is often assumed that external factors are major reasons for states to pursue the development of nuclear weapons, but there are multiple internal factors within the state to examine as well. These internal considerations could be further divided into classifications including internal political actors, domestic politics, and regime type which all play a significant role in pushing a state to proliferate. In other words, the state is not a unitary actor, but contains various interest groups that might benefit, or not, from the state developing nuclear weapons and can influence policy and the decision-making process. The exact amount of influence these factors have on crucial national security issues is difficult to estimate, but it is highly likely that they play a significant role in a nation deciding to proliferate.

Internal political actors including the presence of a strong or charismatic leader that pushes for the development of nuclear weapons because they view it as best for their country, or best for themselves politically, could have a significant role in a decision to build nuclear weapons. Depending on the country, this may make a very large impact on the direction of the nation such as in the case of Ghaddafi in Libya where he changed his country's stance on nuclear weapons multiple times. Another case is Saddam Hussein, who pushed for a nuclear program in Iraq.<sup>72</sup> Jacques Hymans has explored the different psychological characteristics of leaders that pursue nuclear weapons in his book *The Psychology of Nuclear Proliferation Identity, Emotions, and Foreign Policy* and has identified oppositional nationalist leaders as the most likely to develop nuclear weapons, "The oppositional nationalist leader, operating under the emotional

---

<sup>72</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 136.

impulsions of fear and pride, is not likely to tarry long before taking the nuclear leap in the dark.”<sup>73</sup> Whether this is the case remains an open question.

In the case of India’s proliferation and perhaps the case in South Africa, domestic politics and the role of a leader arguably did impact the decision to develop nuclear weapons. For example, the impact of Indian nuclear program chief Homi Bhabha had on India testing its weapon was a notable instance of an individual whose actions resulted in nuclear policy changes. His public arguments about India’s technical ability to build nuclear weapons and his challenges of the government’s economic concerns about nuclear weapon development made enough of an impact that he was able to convince many key political figures that nuclear weapons were feasible and in their best interest. Opposing him was Prime Minister Lal bahadur Shastri who estimated the cost of the production would be around forty-two to eighty-four million and that the price was not something that India would be willing to pay.<sup>74</sup> After China’s nuclear test in 1964, Bhabha lobbied fiercely for the development of nuclear weapons and claimed that an arsenal of fifty nuclear weapons would cost only twenty-one million dollars and that they could be ready for testing in eighteen months.

After the Chinese test, there was little consensus in India about nuclear proliferation. US intelligence estimated in 1963, a year before the Chinese test, that India could test a nuclear weapon in four to five years.<sup>75</sup> To curtail domestic and international pushback, India looked at the alternative of developing a peaceful nuclear explosion for non-military purposes which Bhabha claimed could be produced for the mere cost of \$368,000 for a ten kiloton nuclear

---

<sup>73</sup> Jacques Hymans, *The Psychology of Nuclear Proliferation Identity, Emotions, and Foreign Policy*, ed. MyiLibrary (Cambridge: Cambridge University press, 2006), 35.

<sup>74</sup> Sagan, “Why Do States Build Nuclear Weapons?” 66.

<sup>75</sup> *Ibid.*, 65.

device.<sup>76</sup> Due to internal factors including Bhabha being succeeded by Vikram Sarabhai, a strong opponent of any nuclear test, India stalled testing.<sup>77</sup> In 1971, Sarabhai passed away and India resumed its attempts to undertake a nuclear test which succeeded in 1974. Although it is not entirely clear the exact amount of influence these individuals had on decision-making, their public stances on the issue seem to have produced enough push to affect policy.<sup>78</sup> This suggests that domestic considerations were a strong motivator for developing nuclear weapons in this case.

Regime type is another often used domestic explanation for nuclear proliferation. While there are scholars on both sides of this argument, some have made the claim that democracies are less likely to develop nuclear weapons as they are more concerned with international norms and want to be seen as well-behaved nations.<sup>79</sup> Moreover, totalitarian states where leaders are able to dominate state decisions are thought to be more likely to develop nuclear weapons. A counter to this argument is that democratic leaders are concerned with their approval and may decide to pursue the development of nuclear weapons to boost their popularity and as a result become re-elected, while totalitarian states do not face these same concerns.<sup>80</sup>

Authoritarian regimes and weak democracies are the most prevalent types of government systems in the Middle East. It is possible that this could be a factor that would make proliferation more likely in the region as such regimes typically have tight control over opposing political voices, the scientific community, and the military. The lack of oppositional voices due to regime

---

<sup>76</sup> Peter Lavoy, "Nuclear Proliferation Over the Next Decade: Causes, Warning Signs, and Policy Responses," *The Nonproliferation Review* 13, no. 3 (2006): 440, <https://doi.org/10.1080/10736700601071363>.

<sup>77</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 6-7.

<sup>78</sup> Sagan, "Why Do States Build Nuclear Weapons?" 66.

<sup>79</sup> Van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons," 226.

<sup>80</sup> Scott Sagan, "The Causes of Nuclear Weapons Proliferation," *Annual Review of Political Science* 14, no. 1 (2011): 237, <https://doi.org/10.1146/annurev-polisci-052209-131042>.



type could thus increase the ability for a nation to proliferate. If the governing power decided to follow that path, any opposition to the decision domestically would be stifled.

If there was a strong internal push for nuclear weapons, in the Middle East or elsewhere, it could be perceived as politically beneficial to the governing power to develop them. This result could be twofold. First, it could increase a government's support if nuclear proliferation was considered favourable. Second, it could be used as an internal political tool to unify and create nationalistic sentiments by making it appear that there was a real or perceived security threat. This would be especially true if there was internal instability that was threatening the leadership of the country. Nuclear weapons could then be used to create a type of diversion from domestic issues and unify the country, particularly if there was significant international pushback against its program which could become a secondary unifying factor.<sup>81</sup>

### ***External Considerations and Prestige***

Before a country decides to develop nuclear weapons, there are a number of factors concerning how proliferation would affect its relations with other nations that will need to be considered. Strong international norms against further proliferation could cause diplomatic, economic, and security challenges. On the other hand, there are only nine nuclear states which gives countries that possess nuclear weapons somewhat of an elite status. Moreover, the P5 members of the UNSC are the only five states that are recognized as nuclear states within the NPT. This gives the perception, justifiably or not, that states with nuclear weapons wield the

---

<sup>81</sup> Van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons," 225.

most power as the P5 are the only states in the UNSC to possess a veto. Clifton Sherrill noted this perception and its impact on the actions of nuclear have-nots:

While the international non-proliferation regime has tried to diminish the prestige of nuclear arms, the fact that the five permanent members of the UN security council are also the five “legal” nuclear powers under the NPT does not escape notice. Thus, soft-power attempts to construct new non-proliferation norms have, so far, failed to overcome hard-power realities.<sup>82</sup>

It would be understandable that other countries would also want to develop nuclear weapons to gain prestige and importance on the international stage. Conversely, it is possible that for this very same reason, states would not want to develop nuclear weapons to maintain their position and relationships in the international community by abiding by the NPT and international norms.

Possessing nuclear weapons could impact the way nations are perceived by other nations, their relations with other nations, lead to feelings of greater flexibility in their decision-making, and make nations less reliant on outside powers for their security and technological needs which could all be seen as increasing their prestige. Sico van der Meer in his article “State’s Motivations to Acquire or Forgo Nuclear Weapons: Four Factors of Influence” argues that nuclear weapons give those who possess them greater political power and influence. He noted:

This kind of positive perceptions of nuclear weapons is regularly labelled as ‘symbolism’ because the weapons are not regarded positively because of their actual usefulness as military weapons, but more because of their symbolic value. Nuclear weapons are, in the perception of some observers, used to show how modern, technological advanced, prestigious, powerful, and/or sovereign the owner state is.<sup>83</sup>

---

<sup>82</sup> Sherrill, “Why Iran Wants the Bomb,” 43.

<sup>83</sup> Van der Meer, “States’ Motivations to Acquire or Forgo Nuclear Weapons,” 223.

International perceptions towards nuclear pursuits have varied significantly depending on the country, its position in the international community, and the time period in which the pursuit occurred. During the 1960s, developing nuclear programs were seen as desirable and prestigious, but ultimately fears over the negative effects from nuclear tests and the potential global consequences of nuclear war shifted perceptions and states desiring nuclear weapons were considered dangerous and illicit.<sup>84</sup> While members of the NPT are held to a different standard, even amongst those that are members of the treaty, some states are given different levels of trust than others. Further notable contradictions can be found in the way the international community reacts to speculations of nuclear proliferation. For example, although India and Pakistan were both criticized for their nuclear weapons, the impact was not particularly detrimental, and it is arguable that they gained greater political leverage in Asia and beyond and did not face harsh consequences.<sup>85</sup>

As nuclear states, the nations view themselves in the same category as the other nuclear powers gaining prestige and the ability to use their new status to influence other nations on the international level. One scholar notes:

Indians perceive themselves as victims of an immoral order and as being held in a position of inferiority by structures of power over which they have little influence....[the Indian government] believes that nuclear weapons remain a key indicator of state power, and holds that acquisition of nuclear power by India will act as a symbol of prestige and as a tool of leverage at the international level.<sup>86</sup>

---

<sup>84</sup> Sagan, "Why Do States Build Nuclear Weapons?" 61, 76.

<sup>85</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 7.

<sup>86</sup> Sharif Shuja, "India and Nuclear Weapons." *American Asian Review* 19, no. 3 (2001): 103, <http://search.ebscohost.com.uml.idm.oclc.org/login.aspx?direct=true&db=a9h&AN=5719659&site=ehost-live>.

The two nations received more of a slap on the wrist from the international community than a strong international condemnation, as no sanctions or strong response resulted from the UNSC.<sup>87</sup> While India and Pakistan did receive backlash in the form of bilateral aid being cut off from fourteen countries, the US was the only member of the P5 to cut trade or bilateral aid. The US placed some of the toughest sanctions against both countries, but lifted most of them just a year later in 1999, and removed those remaining in 2001.<sup>88</sup> The G8 also imposed lending sanctions, but they were “so full of loopholes that their deterrent effect on potential future proliferators was undermined.”<sup>89</sup> While still not viewed as official nuclear weapon states, this weak condemnation validated India and Pakistan’s nuclear position.

It is thought that most states developing nuclear weapons programs intend to produce and test a nuclear weapon, but Van der Meer suggested that another motivation for states could be to purely gain international attention.<sup>90</sup> This attention would not necessarily be positive, but regardless, their apparent willingness to produce weapons could make other nations take them more seriously as important players in the region or globe. Alternatively, states could be motivated to pursue nuclear weapons to gain more status via the threat of nuclear proliferation or nuclear blackmail. Although this would be a very risky policy, a country’s subsequent reduction of its nuclear program could result in benefits that would be advantageous even if it is questionable whether the pay off would make the other ramifications worthwhile.

---

<sup>87</sup> Orde Kittrie, “Averting Catastrophe: Why the Nuclear Nonproliferation Treaty is Losing its Deterrence Capacity and How to Restore it?” *Michigan Journal of International Law* 28, no. 2 (2007): 394, <http://search.proquest.com/docview/208562823/>.

<sup>88</sup> *Ibid.*, 397.

<sup>89</sup> *Ibid.*, 395. Exceptions were made for “humanitarian projects” and did not abolish prior made agreements. The G8 consisted of United States, Russia, Italy, Japan, United Kingdom, Germany, Canada, France.

<sup>90</sup> Van der Meer, “States’ Motivations to Acquire or Forgo Nuclear Weapons,” 223.

In the case of the Middle East, as Israel is the only nuclear power in the region presently, it has created feelings of inferiority and vulnerability in both Iran and the Arab countries. Due to decades of animosity between Israel and its neighbours, another state in the region gaining nuclear weapons could lead to a feeling of political independence, national pride, and could give the possessing country a sense of technological superiority.<sup>91</sup> Depending on the individual country, the specific gains could vary.

Iran for example, given the damage to its pride of being in close proximity to two nuclear powers, Israel and Pakistan, wants to portray itself as a strong regional power. In particular, this is embarrassing to Iran as the majority of Pakistan's population is Sunni, while the majority of Iran's population is Shia. In this way, sectarian pride could be a motivating factor in the decision to build nuclear weapons. The other proximal nuclear power, Israel, is a country which Iran has declared an enemy, and becoming equal on a nuclear level could likewise be rationalized as an issue of pride. For Egypt, Israel's attacks on Egyptian land and sovereignty have been an area of great humiliation and emerging as a nuclear power could be a way to increase its prestige.

Another consideration, both in the context of the Middle East and in other nations in similar situations, is the feeling of Western dominance in the region which has often turned into a perception of dependence. Their argument is that if nuclear weapons are beneficial and allowed for the US and other Western powers, then they should be beneficial and allowed for others also. Therefore, a Middle Eastern country developing nuclear weapons could possibly be regarded as a triumph for other nations in the region as well. For example, in the case of Egypt it

---

<sup>91</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 7.

could potentially be viewed as both a bomb for Africa and for the Arab Middle East.<sup>92</sup> By possessing nuclear capabilities, the state and region may perceive themselves as having a higher position in the international community. This could be viewed as a triumph domestically and regionally with political leaders and the nation gaining recognition for advancing both the country and region's international standing.

After the push and creation of the NPT, however, nuclear non-proliferation became a deeply engrained international norm. While it would be hard to prove causation, there is a correlation between the reduction of international proliferation efforts and the NPT. The non-proliferation regime and NPT have altered the acceptable standards of behaviour for states. Countries that decide not to sign onto treaties such as the NPT, risk being viewed as pariah or rogue states.<sup>93</sup> These norms could cause greater negative implications for a country if it attempted to proliferate and could make the development of nuclear weapons more difficult.<sup>94</sup>

The NPT does not always prevent the pursuit of nuclear weapons as exemplified through the cases of Iran, Iraq, and North Korea that all ratified the NPT, yet still pursued nuclear weapons at different points in time. This resulted in some believing that nuclear proliferation has not truly been reduced, but instead has just become less visible. When South Africa was transitioning its government in 1993 and its secret nuclear program was disclosed, it announced that all its weapons were dismantled and as a result, the nation received international praise.<sup>95</sup> Similarly in 2003, Libya renounced its nuclear program and increased its international standing

---

<sup>92</sup> World Nuclear Association, "Nuclear Power in South Africa," last modified August 2020, <https://www.world-nuclear.org/information-library/country-profiles/countries-o-s/south-africa.aspx>. South Africa previously possessed nuclear weapons, but voluntarily dismantled them by the early 1990s. There are currently no African countries possessing nuclear weapons.

<sup>93</sup> Van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons," 221.

<sup>94</sup> Ibid., 222.

<sup>95</sup> Cirincione, *Bomb Scare*, 62.

which was noteworthy especially given that its nuclear program was many years away from becoming workable.<sup>96</sup> This was a significant step which allowed Libya to repair international relations with western powers. Regarding its relationship with the US, after Libya dismantled its program steps were taken including “lifting travel restrictions, allowing U.S. firms to negotiate contracts for their return to Libya, insuring a general licence for trade and investment, upgrading diplomatic relationships, unfreezing Libyan assets, and permitting aviation trade.”<sup>97</sup> This also improved Libya’s economic situation as it had been facing economic sanctions which were particularly damaging due to Libya’s undiversified economy and its dependence on oil revenue.<sup>98</sup> Although its nuclear program was still in its initial stages, by renouncing it Libya was able to regain diplomatic relations and improve its economic situation rapidly.<sup>99</sup>

Nuclear proliferation can both positively and negatively impact a nation. In the context of external considerations, positive impacts could include the increase of political influence and prestige. Negatively, a nation can face harsh criticisms, harm diplomatic relations with other countries, and be seen as an aggressor. While these negative implications may be enough of an impact for some nations to reconsider proliferation, this is not always a sufficient disincentive.

Mohamed El Baradei noted while he was the director of the IAEA,

Unless we have created the environment in which nuclear weapons are seen as an historical accident from which we are trying to extricate ourselves as soon as we can, we will continue to have this cynical environment that all the guys in the minor leagues will try to join the major leagues.... They will say, I would like to emulate the big boys if I

---

<sup>96</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 8.

<sup>97</sup> Ibid., 127.

<sup>98</sup> Ibid., 146; and Richard Nephew, “Libya: Sanctions Removal Done Right? A Review of the Libyan Sanctions Experience, 1980–2006,” Center on Global Energy Policy, Columbia University (2018), 16-17, <https://doi.org/10.7916/D8H437J8>. Libyan officials estimate that sanctions cost Libya upwards of \$30 billion dollars. After the removal of sanctions in 2004 Libya’s economic growth, GDP, and FDI increased until 2008 when the results of the global recession impacted oil prices with its GDP slowly continuing to rise until the 2011 Civil War.

<sup>99</sup> This lasted until the 2011 Libyan Civil War. Due to Ghaddafi’s response to the uprising and violence against protesters, the UN authorized a military intervention which was led by a NATO coalition.

have a security problem. If the big boys continue to rely on nuclear weapons, why shouldn't I?<sup>100</sup>

Although there are external factors that may make a country decide not to proliferate, it appears that until nuclear weapons are no longer treated as objects of prestige, countries will continue to desire them for this reason.

### *Economic and Technological Feasibility*

Although a country may desire to develop nuclear weapons, this does not mean that it will have the economic and technological capabilities to do so. Exploring the issue of feasibility helps understand to what extent having the economic and technological ability to build nuclear weapons is a motivation for countries to proliferate and to what extent it acts as a barrier.

Nuclear weapons are very expensive, and countries must spend a significant amount of money in order to build the infrastructure, develop the necessary technology, delivery systems, learn how to utilize it, and, most important and costly, produce the fissile materials needed. This is not a sacrifice that every country would be willing or able to make and thus the issue of feasibility is often seen as a natural barrier against nuclear proliferation, especially for developing countries.<sup>101</sup>

On the other hand, while the economic and technological abilities of a country are limiting factors and the realistic feasibility of a country developing nuclear weapons needs to be considered, this should not be the end of the discussion. Bahgat in his book *Proliferation of*

---

<sup>100</sup> Mohamed ElBaradei, *Statement at the Carnegie International Non-Proliferation Conference* (November 7, 2005), quoted in Cirincione, *Bomb Scare*, 63.

<sup>101</sup> Van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons," 212.



*Nuclear Weapons in the Middle East* recognizes the challenges that feasibility places, but views technology as a hurdle, not a barrier for proliferation. He argues that if there was significant will to build nuclear weapons, that there would also be the possibility to overcome economic and technological issues.<sup>102</sup>

As developing nuclear technology and nuclear weapons are expensive, for a country to realistically build up any sort of a nuclear arsenal, the country would need to prioritize its nuclear weapons program in order to attain this goal. If the country already had a strong nuclear energy program then this could be used as a foundation and thus be slightly less costly, but it would remain an economically demanding endeavour. Additionally, as nuclear non-proliferation has become the international norm, it is likely that a country pursuing nuclear weapons or upon testing a nuclear weapon would experience economic difficulties due to imposed sanctions and their changed relationship with other nations.

While economic feasibility is an issue, there have been states that have bypassed this such as India and Pakistan, which both managed to acquire nuclear weapons, first with India's "peaceful test" in 1974, and later with the second Indian and subsequent Pakistani nuclear weapons tests in 1998 by re-allocating their budgets and making sacrifices in other areas.<sup>103</sup> The most recent nuclear state, North Korea, also managed to create nuclear weapons despite its poor economic conditions. The ability of other nations to develop nuclear weapons despite significant financial constraints challenges the idea that economic feasibility is a motivation in itself and the necessity of being a wealthy country to proliferate. It is evident through these cases it is possible for some countries to make economic sacrifices to overcome financial hurdles. In other cases,

---

<sup>102</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 5.

<sup>103</sup> Lawler and Bagla, "Experts Search for Details after Indian Nuclear Tests," 1189.

countries may conclude that the economic cost of a program is too high, and would not be a sacrifice that they are willing to make.<sup>104</sup>

The most difficult and important part of building nuclear weapons is thought to be the production of fissile materials, which is why the non-proliferation regime is concerned with monitoring enrichment through the IAEA. Both uranium and plutonium have been found to produce large amounts of energy when split and both can be used to build nuclear weapons.<sup>105</sup> There are different types of uranium isotopes, but not all types can be utilized for nuclear weapons so the specific isotope that can be best used to produce large amounts of energy, U-235, is separated through the process of enrichment. While the IAEA considers uranium that is enriched above 20% as highly enriched uranium, weapons-grade needs an enrichment level closer to 90%.

Similarly, there are reactor grade and weapons-grade plutonium. Both are by-products produced by uranium reactors, but have differing isotopes. In this process, there is a specific isotope ratio that must be achieved for plutonium to be reliable, predictable, and safe to use. This is one of the most challenging aspects of creating any nuclear program as without fissile material, it would be impossible for any country to develop a nuclear weapon. If a country is unable to master this part of the nuclear fuel cycle, they would need to either purchase large amounts of enriched materials from other countries, or perhaps even buy a completed weapon from another nation. It is speculated that this could be an option for wealthy countries such as

---

<sup>104</sup> Lavoy, "Nuclear Proliferation Over the Next Decade," 450.

<sup>105</sup> Cirincione, *Bomb Scare*, 6; and, World Nuclear Association, "Plutonium," last modified December 2018, <https://www.world-nuclear.org/information-library/nuclear-fuel-cycle/fuel-recycling/plutonium.aspx>.

Most natural uranium is found in the isotope U-238, but this isotope does not reliably undergo fission making it less useful. The isotope U-235 is rarer, with only 1 in every 140 atoms (or 0.7 %) naturally occurring in this form, but it reliably undergoes fission. For plutonium to be weaponized, the fuel is removed from the reactor after a few months to ensure a high concentration of Pu-239. To be utilized, it should have less than 8% Pu-400, a percentage that will increase as the fuel is used.

Saudi Arabia. Even if a nuclear nation is not willing to sell components or a completed device, there is the possibility of cooperation and sharing of nuclear knowledge.

A secondary and equally important feasibility issue is the ability not only to produce fissile material, but to have a way to use it. Developing a nuclear weapon would not be a credible deterrent or threat to any nation unless it was paired with a delivery system. Depending on the state's conventional military strength, substantial time and resources need to be put into developing a nuclear weapon carrying device and, in particular, ballistic missile production technology. A weapon without a delivery system could be a security concern as another nation could potentially pre-emptively attack its nuclear stores and it would have no ability to retaliate. Analyzing the missile capabilities of a nation can then be considered an indicator of pursuing nuclear weaponization.

Although feasibility is presumed to be a motivation for proliferation, it is quite difficult to prove that having the ability to develop nuclear weapons is a motivation for building them as there are many other factors involved. Thinking of it as a “why not” principle is tempting, until the other motivations are examined and the strong norms and disincentives against nuclear proliferation are taken into account. More useful, is to view technological and economic feasibility as necessary considerations for proliferation rather than a sufficient condition for proliferation itself. That being said, it could be argued that states that already have the economic and technological capabilities may be more likely to become nuclear states.

A counter to the argument that states with the ability to develop nuclear weapons would do so are the many examples of states that have abandoned their nuclear programs, gave up their nuclear weapons, or that possess the technological and economic ability to do so but have not yet. Often discussed as latent nuclear powers, there are states that have indigenous nuclear

programs and have the ability to produce fissile material yet have never developed nuclear weapons. The amount of time it would take for a country to develop actual nuclear weapons varies from one country to another, but it is estimated that there are multiple states globally that in a matter of months could potentially have nuclear weapon capabilities if they wanted to. Matthew Fuhrmann and Benjamin Tkach in their article “Almost Nuclear: Introducing the Nuclear Latency Dataset” argue that a total of thirty-one countries developed the ability to build nuclear weapons between 1939 and 2012, but that only ten of them acquired nuclear weapons.<sup>106</sup> If their research is correct, this would be a challenge to the argument of causation as the majority of countries that have the ability to produce nuclear weapons have not produced them. This is most likely due to other considerations discussed such as the diplomatic implications, external pressure, and security benefits related to non-proliferation.

Earlier estimates predicted nuclear proliferation would spread at a faster rate and that there would be more nuclear powers. It would follow that the more countries with nuclear weapons, the more countries that will seek them, leading to nuclear “proliferation.”<sup>107</sup> Nuclear weapons are the most advanced and powerful weapons, so it would be natural for countries to desire them. It is difficult to predict if proliferation increased whether countries that have solved the feasibility issue would be more likely to develop nuclear weapons, but one could predict that if the other indicating factors were present, it would make an easier and swifter transition into being a nuclear power.

---

<sup>106</sup> Matthew Fuhrmann and Benjamin Tkach, “Almost Nuclear: Introducing the Nuclear Latency Dataset,” *Conflict Management and Peace Science* 32, no. 4 (2015): 443, <https://doi.org/10.1177/0738894214559672>.

<sup>107</sup> Van der Meer, “States’ Motivations to Acquire or Forgo Nuclear Weapons,” 212.

## *Conclusion*

The possession of nuclear weapons carries a range of costs and benefits. The framework of four motivations - security concerns; internal considerations; external considerations and prestige; and feasibility - provides the means to evaluate why nations pursue nuclear weapon capabilities, and others do not. While the categories can act as a basis for understanding proliferation, each country's situation is unique and a specific factor could be understood by examining it in the context of multiple categories, and likewise it is possible that a country could be motivated to acquire nuclear weapons mainly due to only one of the categories. In the next two chapters, this framework is applied to the situations in Egypt and Saudi Arabia respectively to predict if there are any of the indicators present to suggest that they may decide to pursue nuclear weapons in a situation where Iran proliferated.

## **Chapter III**

### **Egypt**

Egypt has remained a strong military power in the Middle East over the past half century. Shortly after the first nuclear weapons were developed, Egypt sought to possess the same capabilities. These efforts never progressed into a functioning nuclear weapons program and it later gave up its ambitions. Instead, Egypt has pushed for a MENWFZ and has clung to international non-proliferation norms. If Iran developed nuclear weapons, it could drive Egypt to also attempt to attain nuclear capabilities. The prospect of this occurring and the validity of the argument that Iranian proliferation will spark a domino effect in the Middle East can be explored by examining one of the most likely contenders of nuclear proliferation in the region- Egypt. In this chapter, Egypt is presented as a case study through the examination of the four motivations for proliferation discussed in the second chapter including: its security concerns regarding Iran and other adversaries; internal political and domestic factors; international considerations and prestige; and its economic and technological abilities to identify the plausibility of Iranian proliferation instigating nuclear weapons development in Egypt.

#### ***Security Concerns***

Egypt and Iran, while not enemies, have long been regional rivals. Their relationship became particularly tense after the discovery of Iran's nuclear weapons program. Egypt, having unsuccessfully attempted its own nuclear program half a century earlier, is now encountering the reality that Iran may eventually develop nuclear weapons. This may affect Egypt's security situation given its rivalry, reignite old tensions with Israel, and test Egypt's security

relationships.<sup>108</sup> Whether this would be a significant enough security threat to warrant Egypt to develop its own nuclear weapons program is still unclear.

The relationship between Egypt and Iran has fluctuated over the last century. After the Egyptian July 23<sup>rd</sup> Revolution in 1952, Egypt made drastic changes to its foreign policy by focusing on the theme of Arab nationalism and aligning with the Soviet Union. In contrast, before the 1979 Iranian Revolution, Iran was a close ally of the US which means that for a portion of the Cold War, Egypt and Iran found themselves supporting opposing poles.<sup>109</sup> From 1960-1970, relations between the countries were completely severed and did not resume until after Egyptian President Nasser's death and subsequent Egyptian policy changes. However, following the Iranian Revolution relations experienced another decline.

Egypt by that time had made peace with Israel, became a close informal ally of the US, and ended its alliance with the Soviet Union. Iran was critical of Egypt's policy changes and in particular of its participation in the Camp David Accords in 1978 and its decision to make peace with Israel. Iran likewise had a reversal of its alliances and declared itself an enemy of the US following the revolution. Egypt expressed its own criticism over the results of the Iranian Revolution and again severed diplomatic ties in 1980. Moreover, Egypt provided asylum to the disposed Shah despite Iran's demands for him to be returned and held on trial.<sup>110</sup> Relations

---

<sup>108</sup> Important security ties exist with countries including US and members of the Arab League through the Arab League's Joint Defence Council.

<sup>109</sup> Gawdat Baghat, "Egyptian Regional Policy: National Security, Energy and Water," in *Reassessing Order and Disorder in the Middle East: Regional Imbalance or Disintegration?* ed. Robert Mason, (Lanham: Rowman & Littlefield, 2017), 161.

<sup>110</sup> Mahmood Monshipouri and Anthony Zamary, "Re-Evaluating Iran-Egypt Relations: A Look at the Evolving Geopolitical Context," *Insight Turkey* 19, no. 2 (2017): 219, <https://doi.org/10.25253/99.2017192.11>.

continued to be poor during the 1980s exemplified by Egypt choosing to support Iraq throughout the Iran-Iraq War.<sup>111</sup>

Diplomatic relations changed slightly in 1989 after the death of Ayatollah Ruhollah Khomeini, the leader of the Iranian Revolution, and gradually improved over the proceeding decade. Communication between the countries was restored after a 2001 meeting between Egyptian President Hosni Mubarak and the Iranian foreign minister Kamal Kharrazi. In 2008, Iranian President Mahmoud Ahmadinejad informed Egypt that Iran was ready to open up an embassy in Cairo again, but no major steps were taken due to Egypt's condemnation of Iran's nuclear program. After the Egyptian Revolution in 2011, President Ahmadinejad visited Cairo which opened the doors to increased diplomatic relations and Egypt reciprocated in 2012 with the short-lived President of Egypt, Mohamed Morsy, visiting Tehran.<sup>112</sup> While the nations do operate de facto embassies, Egypt continues to remain the only Arab country without an embassy in Tehran since the 1979 Iranian Revolution.<sup>113</sup>

Since coming to power in 2014, President Abdel Fattah El-Sisi has been critical of Iran. In particular, he blamed Iran for "aiding the violent Muslim Brotherhood resistance and for helping to destabilize the Sinai Desert through the Iran-aligned Hamas forces in Gaza"<sup>114</sup> as well as making accusations that Tehran has been interfering in Egypt's affairs through Hezbollah militants.<sup>115</sup> During the trial of Muslim Brotherhood officials that resulted in sixteen individuals

---

<sup>111</sup> Christopher Hobbs and Matthew Moran, "Egypt: Domestic Uncertainty, Nuclear Consistency," in *Exploring Regional Responses to a Nuclear Iran: Nuclear Dominoes?* ed. Matthew Moran (Basingstoke: Palgrave Macmillan, 2013), 42, <https://ebookcentral.proquest.com/lib/umanitoba/detail.action?docID=1441235>.

<sup>112</sup> Monshipouri and Zarnary, "Re-Evaluating Iran- Egypt Relations," 221.

<sup>113</sup> Gawdat Bahgat, "Egypt and Iran: The 30-Year Estrangement," *Middle East Policy* 16, no. 4 (2009): 48, <https://doi.org/10.1111/j.1475-4967.2009.00413.x>.

<sup>114</sup> Farhad Rezaei, "Iran's Nuclear Agreement: The Three Specific Clusters of Concerns," *Insight Turkey* 20, no. 2 (2018): 184, <https://doi.org/10.25253/99.2018202.13>.

<sup>115</sup> Maria Rublee, "Leadership Transitions and Nuclear Futures in Egypt and Libya," in *The Nuclear Question in the Middle East*, ed. Mehran Kamrava (London: Hurst & Company, 2012), 44; Awdah Al- Badi, "Saudi-Iranian



being sentenced to death and an additional sixteen individuals to life imprisonment, the court convicted six prominent members of the former administration including President Morsy of espionage. The courts decided that the members of the previous government had handed over important documents to the Iranian Revolutionary Guard that “contained classified information about the outcome of activities by Iranian elements that were aimed at destabilizing the homeland.”<sup>116</sup> Furthermore, the court also stated that they had monitored a meeting that had occurred in 2010 in Syria between the Muslim Brotherhood, Hamas, and the Iranian Revolutionary Guard and that, “they agreed at the meeting on training armed elements by trainers of the Iranian revolutionary guard to be dispatched from the Gaza Strip to Egypt to spread chaos.”<sup>117</sup>

Egypt’s external security focus since the 2011 Egyptian Revolution has been on the broad idea of stabilizing regional security issues including the conflicts in Sudan, Libya, Mali, Yemen, Syria, and the Palestinian cause. Rather than concentrating on these external security issues, it has been focused on its internal security dilemmas and quashing the remnants of the Muslim brotherhood, the Sinai branch of the Islamic State (Wilayah Sina), and other radical groups.<sup>118</sup> Regardless of whether the threat of terrorism was a legitimate security concern or merely securitised for political means, Egypt has focused its efforts on this issue.

---

Relations: A troubled Trajectory," in *Security and Bilateral Issues between Iran and its Arab Neighbours*, ed. Bahgat, Ehteshami, and Quilliam (Cham: Springer International Publishing, 2016), 201. The Muslim Brotherhood is a near century old Sunni religious, social, and political group turned political party, which ran in the 2012 elections under the Freedom and Justice Party with Mohammed Morsy as leader of the party. He was democratically elected in 2012 but a year later General El-Sisi with the encouragement of a large proportion of the population led an uprising and toppled the government in July 2013. The Muslim Brotherhood was shortly after banned and its members and affiliates faced the possibility of imprisonment.

<sup>116</sup> State Information Service, “Court Announces Reasons Behind Lifetime Sentence Against Morsi and Death Sentences Against 16 MB Leaders,” July 2, 2015, <http://www.sis.gov.eg/Story/95190/Court-announces-reasons-behind-lifetime-sentence-against-Morsi-and-death-sentences-against-16-MB-leaders?lang=en-us>.

<sup>117</sup> Ibid.

<sup>118</sup> Abdel Fattah El- Sisi, “Statement of H.E. Abdel Fattah Al-Sisi President of the Arab Republic of Egypt Before the 73<sup>rd</sup> Session of the United Nations General Assembly,” (Speech, New York: General Assembly of the United Nations, September 25, 2018) [https://gadebate.un.org/sites/default/files/gastatements/73/eg\\_en.pdf](https://gadebate.un.org/sites/default/files/gastatements/73/eg_en.pdf).

In response to these concerns, on April 28, 2020 Egypt once again renewed the state of emergency so that the armed forces and police could “take all measures needed to confront terrorism and its funding resources and strengthen security across the country.”<sup>119</sup> During President El- Sisi’s 2018 speech marking the five year anniversary of the June 30<sup>th</sup> uprising he stated: “The turbulent years which Egypt and the region had experienced since 2011 had produced three major challenges, each of which could uproot countries and render their entire populations homeless; the absence of security and political stability, the prevalence of terrorism and armed violence and the collapse of the economy.”<sup>120</sup> These concerns remain Egypt’s top priority despite its efforts and concerns about other regional conflicts.

While Iran and Egypt have had a tense relationship, it is unclear what effect Iranian nuclear weapons would have on Egypt. Egypt and Iran have never been at war with each other and show no indication that their rivalry will escalate to nuclear conflict. Iran’s Shahab-3 medium-range ballistic missiles (MRBMs) do have the ability to reach certain areas of Egypt’s Sinai Peninsula, but Iran does not yet have a delivery system with the range to target the Egyptian capital or densely populated areas. While it is unlikely that Iran would directly target Egypt for a nuclear attack, the possession of nuclear weapons would likely indirectly effect Egypt’s security situation through weakening nuclear non-proliferation norms leading to increased regional instability. If Iran is an irrational actor, it is possible that Egypt could get caught in the middle of a conflict between Iran and other countries such as Israel that may try to take a military approach to Iranian proliferation. Given Egypt’s proximity to both countries, the

---

<sup>119</sup> State Information Service, “President Sisi Issues Decree Extending State of Emergency,” April 20, 2020, <https://www.sis.gov.eg/Story/145823/President-Sisi-issues-decree-extending-state-of-emergency?lang=en-us>.

<sup>120</sup> Abdel Fattah El-Sisi, “Address of President Abdel Fattah Al-Sisi Commemorating June 30 Revolution,” State Information Services, (Speech, Cairo, July 2, 2018), <http://www.sis.gov.eg/Story/132112/Address-of-President-Abdel-Fattah-Al-Sisi-Commemorating-June-30-Revolution?lang=en-us>.

prospect of nuclear or conventional war in its backyard could prove to be a risk that the nation is not willing to take.

Egypt and Israel have had a complicated and conflict ridden past. Given this history, its possible that Israel's reaction to Iranian nuclear weapons development could become an indirect security driver and influence Egypt's decision on proliferation. Possible reactions include Israel conducting a pre-emptive attack against Iran's nuclear facilities, other shows of military strength, or abandoning its longstanding policy of opacity by flexing its nuclear weapons.<sup>121</sup> In response, Iran could either be motivated to abandon its nuclear endeavours, or become provoked and contribute to a further decline in regional stability and the possibility of war. The regional implications of not only Iran's nuclear weapons, but of Israel becoming transparent about its nuclear abilities may be enough for neighboring countries to reassess their stance on nuclear weapons.<sup>122</sup> In Egypt, this would be significant as it has had a history of war with Israel and as Egypt desires to be viewed as a major military and political player in the region.

In 1960, information about the military component of Israel's Dimona reactor was revealed and Egypt was faced with the reality that its greatest adversary at the time was developing nuclear capabilities. Egypt began developing its own program and in 1964 negotiated the purchase of a heavy water reactor from a West German company.<sup>123</sup> The deal never materialized as Egypt cancelled the arrangement a year later due to its anger with West Germany

---

<sup>121</sup> Hobbs and Moran, "Domestic Uncertainty, Nuclear Consistency," 47. Israel has held a long-standing policy of nuclear ambiguity where it neither confirms nor denies its possession of nuclear weapons. This position allows Israel to reap the benefits of deterrence, the threat of nuclear use, face reduced international scrutiny, and avoid increased tensions with its neighbors.

<sup>122</sup> Mark Fitzpatrick, "Will Nuclear Energy Plans in the Middle East Become Nuclear Weapons Strategies?" *International Relations* 22, no. 3 (2008): 382, <https://doi.org/10.1177/0047117808094184>.

<sup>123</sup> Egypt had no nuclear infrastructure at that time, so the development of a nuclear reactor would have been an important first step towards developing nuclear capabilities. As nuclear technology is dual use, this could have been the foundation of both a civilian and weapon program.

supplying Israel with tanks.<sup>124</sup> Egypt made further attempts to acquire such reactors, but was unsuccessful.<sup>125</sup>

During this period the Nasser administration viewed Egypt as the leader in the region and strove to unite the Arab countries together in their struggle against Israel.<sup>126</sup> After a change in leadership in 1970, Egypt experienced a major policy shift where it “reconceptualized Egyptian security, including what constituted a legitimate way to deal with an enemy, and this led to a devaluation of nuclear weapons.”<sup>127</sup> These changes were exemplified by the revised strategies for dealing with Israel. In 1978 Egypt signed the Camp David Accords followed by the Egypt–Israel Peace Treaty a year later and became the first Arab nation to make peace with Israel. The new aim of transforming Egypt into a modern and successful state had no place for nuclear weapons and it was felt its goals would be best achieved through a positive relationship with the US and peace with Israel.<sup>128</sup>

Although the two nations have been at peace for over 40 years, the memory of Israel’s occupation of Sinai and continued human rights violations against Palestinians has led to public opinion in Egypt towards Israel to remain very unfavorable. In 2015, a survey was conducted in Egypt on the perceptions Egyptians had towards 26 countries. The data was compiled into an index with 100 being extremely friendly, and -100 being extremely hostile. Israel was rated the lowest of all countries at -88 followed by the US at -37 and Iran at -36.<sup>129</sup> This opinion poll

---

<sup>124</sup> Rublee, “Leadership Transitions,” 60.

<sup>125</sup> Maria Rublee, “Egypt’s Nuclear Weapons Program: Lessons Learned,” *The Nonproliferation Review* 13, no. 3 (2006): 558, <https://doi.org/10.1080/10736700601071637>. Setbacks included the discovery of natural gas reserves in Egypt which shifted national focus away from nuclear energy, and the Chernobyl incident which increased concerns over nuclear reactors.

<sup>126</sup> Rublee, “Leadership Transitions,” 57.

<sup>127</sup> *Ibid.*, 63.

<sup>128</sup> Hobbs and Moran, “Domestic Uncertainty, Nuclear Consistency,” 45.

<sup>129</sup> “The Perception of Egyptians Regarding Friendly and Hostile Countries,” Baseera: The Egyptian Center for Public Opinion Research, September 29, 2015, <http://baseera.com.eg/EN/RecentPolls2.aspx?ID=84>.

showcases the reality that while diplomatically Egypt remains at peace with Israel, there is very strong anti-Israeli public sentiment within the nation which could result in protests if Israel were to make drastic nuclear policy changes, and pressure the government to respond with its own nuclear deterrent. Regardless, the two countries have been at war during a time of nuclear imbalance and it did not motivate Egypt to proliferate. It is less likely that during a time of peace this would be a significant enough motivation despite how Israel would react to Iranian proliferation.<sup>130</sup>

The US has never formally provided Egypt with security guarantees, but their longstanding relationship based on the mutual goal of regional stability is important to both countries.<sup>131</sup> This security relationship could be jeopardized if Egypt decided to proliferate and US military exports and aid would most likely be stopped. Egypt relies heavily on foreign aid and it could pose a security challenge to Egypt if it were to dramatically change its nuclear policies.<sup>132</sup> After the 1979 Egypt-Israel Peace treaty, the US agreed to have a deeper security relationship with Egypt through an agreement to sell, and in some cases finance, military equipment and services.<sup>133</sup> The US has since provided billions of dollars in aid to Egypt with the majority of the money being allocated as military aid to support peace and security efforts.<sup>134</sup>

The security relationship between the two countries is considered mutually beneficial as, “U.S. assistance to Egypt reinforces this cooperation in a manner consistent with U.S. regional strategic interests, which include helping Egypt defeat Islamic State of Iraq and the Levant terrorists and other extremist groups, strengthening governance and respect for human rights, and

---

<sup>130</sup> Bahgat, “A Nuclear Arms Race in the Middle East: Myth or Reality?” 31.

<sup>131</sup> Hobbs and Moran, “Domestic Uncertainty, Nuclear Consistency,” 47.

<sup>132</sup> See pages 57-58 for a more in-depth exploration of Egypt’s reliance on American foreign aid.

<sup>133</sup> Jeremy Sharp, “Egypt: Background and U.S. Relations,” Congressional Research Service, last modified March 12, 2019, <https://fas.org/sgp/crs/mideast/RL33003.pdf>, 21.

<sup>134</sup> Ibid., Background.

fostering economic growth.”<sup>135</sup> If Egypt began developing a nuclear weapons program, it is possible that this aid and other economic and military support Egypt receives would diminish, if not end. The US surely would view Egypt becoming a nuclear weapons state negatively, but Egypt’s important role in maintaining regional stability may prevent the US from taking more drastic action.

Due to Iran and Egypt’s poor relations the change in the balance of power created by Iran becoming a nuclear power could be a cause of instability and insecurity in the Middle East. Egypt has a history of priding itself on its military and ability to protect itself against external threats so it is possible that Iran’s proliferation and the subsequent reaction from neighboring countries could push Egypt to also desire that capability. Conversely, due to Egypt’s already fragile domestic political situation the government may more likely pursue policies that strengthen its relations with allies and security partners. After Egypt’s decision to forgo nuclear weapons in the 1960s it sought other methods of increasing its security standing including increasing its conventional military and weapons capabilities and focusing on establishing a MENWFZ.<sup>136</sup> President El-Sisi has retained a conservative approach when dealing with its foreign policy by choosing diplomatic over military intervention and focusing on internal issues and regional stability. These points combined indicate that while there are security concerns that could make Egypt desire nuclear weapons, these are most likely insufficient motivations alone to prompt Egypt to pursue their development. Egypt would be unlikely to proliferate at present based solely on security considerations and it is more likely that it will refrain while gradually increasing its latent nuclear power by building up its civilian nuclear program.

---

<sup>135</sup> “Egypt: Foreign Assistance,” Foreign Assistance.gov, last modified June 21, 2019, <https://www.foreignassistance.gov/explore/country/Egypt>.

<sup>136</sup> Bahgat, “Egyptian Regional Policy,” 163.

### *Internal Considerations*

Egypt has experienced a decade of volatility with two uprisings resulting in the ousting of two presidents and a major domestic push against terrorism and terrorist groups in Egypt including ISIS, the Wilayah Sina, and the Muslim Brotherhood. As a result of these events Egypt has concentrated on its domestic concerns and has not been as focused on regional power dynamics as it has in the past. Its focus on economic development has led its foreign policy to be shaped around its economic interests and internal security rather than regional superiority. Insight into what extent domestic considerations could influence Egypt's decision to proliferate can be found by examining the focus Egypt has put on securitisation, its current political situation, and the role its leadership has and continues to play in decision-making.

Egypt has a long history of using securitisation, a government's transformation of an issue into an existential threat through the use of rhetoric and other devices, so that extreme measures can be taken in the name of security, control, legitimacy, and as a method of maintaining power. Whether through real or facilitated threats, Egypt has continued to use the threat of an enemy to bolster political support. After the uprising against Morsy in 2013, effective campaigns were conducted to label all members of the previous government as terrorists, and in so doing, detain a large portion of the political opposition.<sup>137</sup> In the name of fighting the Muslim Brotherhood and terrorism, Egypt has declared emergency law, held mass trials that resulted in executions, and conducted a number of anti-terrorist operations within Egypt. It is possible that if the Egyptian government saw the country becoming divided, they

---

<sup>137</sup> State Information Service, "Court Blacklists MB as Terrorist Group," February 24, 2014, last modified August 14, 2014, <http://www.sis.gov.eg/Story/79215/Court-blacklists-MB-as-terrorist-group?lang=en-us>.

could likewise use the threat of Iranian proliferation to band the nation together for a common goal, gain political support, and justify the creation of a nuclear weapons program.<sup>138</sup>

A 2012 public opinion survey on Egyptian perceptions towards nuclear weapons showed the population was generally favorable toward nuclear proliferation. The poll asked Egyptians what their country should do if Iran succeeded in developing a nuclear weapons program. Around 61% responded that Egypt should build its own weapons, while only 32% thought the country should push for a MENWFZ.<sup>139</sup> While this survey indicates Egyptians are generally in favour of the idea at the time of the survey, Egypt's recent domestic upheavals have also shown the possible consequences the government could face if the population opposed a decision to go nuclear. This may influence the current government into making more cautious foreign policy decisions and continue its recent focus on internal issues and in maintaining security in the Middle East and North Africa to avoid the chance of political objection or demonstrations occurring.<sup>140</sup> The Iranian issue has not been politicised nor securitised so it is unlikely it would be used as a political tool at present unless other conditions change such as Iran becoming an increased security threat or if there was a perceived domestic benefit.

Historically Egypt has experienced weak democracies and decades of dictatorships. Given this political environment and lack of input from the population, Egypt's presidents were able to determine the direction of the nation. Nasser, Sadat, Mubarak, and now El-Sisi all had

---

<sup>138</sup> Rublee, "Leadership Transitions," 58. In North Korea the development of its nuclear program may have been in part a way the regime ensured its survival. When Kim Jong Il took power after the death of his father, the founder of the nation, there were reports of internal political struggles and that at least two attempted coups had taken place. The nuclear program was used as a tool to gain support from the military and to obtain legitimacy in light of the poor economic conditions that were present in the country. In defying international non-proliferation norms and the international community, Kim Jong Il was able to build up nationalist sentiment, increase his political support, and leave his son Kim Jong Un with a project that he continued and used for his own domestic support after his father's death.

<sup>139</sup>Shibley Telhami, "2012 Public Opinion Survey," The Anwar Sadat Chair for Peace and Development, University of Maryland, May 21, 2012, <https://sadat.umd.edu/polls/2012-and-earlier-public-opinion-polls-and-reports>.

<sup>140</sup> Abdel Fattah El- Sisi, "Statement."



very different focuses and priorities when it came to security and where funds were allocated including with regard to developing a nuclear weapons program. In Egypt, the role of the leader has greatly impacted any decisions related to the pursuit of nuclear weapons and most likely will continue to do so.

Egypt began its nuclear program in 1954 during the Nasser administration but it was not until 1960 that it started a nuclear weapons program.<sup>141</sup> Given the security climate at the time and the threat of Israel developing nuclear weapons, Egypt had many legitimate reasons to do so. In 1960 after Egypt discovered the existence of the Dimona reactor in Israel, Nasser announced that if Israel acquired nuclear weapons “we would secure atomic weapons at any cost.”<sup>142</sup> It is unknown, however, how committed Nasser truly was to developing nuclear weapons. Marie Rublee suggested that during the 1960s Egypt was seriously considering nuclear weapons development, while Gawdat Bahgat noted that “rhetoric aside, there are no indications that Egyptian leaders have ever made a strong commitment to pursue such an option.”<sup>143</sup> It is possible that during this time Egypt was intent on pursuing the capability but was either unable or simply decided not to. A variety of factors most likely contributed to Egypt’s decision to forgo the development of nuclear weapons including the lack of technological ability, the economic toll it would take on the nation, Egypt’s development of conventional and other weapons of mass destruction (WMDs), the lack of international support for a nuclear program, lack of internal political motivation, and the decision that diplomatic means would be more effective for achieving its foreign policy objectives.<sup>144</sup>

---

<sup>141</sup> Rublee, “Leadership Transitions,” 60.

<sup>142</sup> Quoted in Rezaei, “Iran’s Nuclear Agreement,” 185.

<sup>143</sup> Rublee, “Egypt’s Nuclear Weapons Program: Lessons Learned,” 556; and Bahgat, “Egyptian Regional Policy,” 162.

<sup>144</sup> Bahgat, “Egyptian Regional Policy,” 163; and Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 111. While Egypt has denied the possession of WMDs it is believed to have spent a substantial amount of money on

Maria Rublee argued that after the mid 1900s, it was not Egypt's economic inability to produce nuclear weapons that prevented the project from materializing as much as it was the role of the President, Gamal Abdel Nasser (1954-1970). Internally, it is possible President Nasser did not want to seriously pursue nuclear weapons because he believed that would give too much power to the defense minister, the Atomic Energy Establishment, or he felt it did not suit his political goals. Externally, he may have avoided it due to pressure from the United States or the Soviet Union, emerging nuclear non-proliferation norms, or political reasons.<sup>145</sup> It is believed that "Nasser's signature of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1968 was not likely motivated by anti-nuclear or pacifist sentiments - rather, it was a strategic choice to use diplomatic tools to isolate Israel."<sup>146</sup> Nevertheless, he still managed to create the first seed of a nuclear program. In 1961 he established the first research reactor and the faculty of nuclear engineering which enabled Egypt to have skilled academics in this field and conduct nuclear research domestically.<sup>147</sup>

President Anwar El-Sadat (1970-1981) took a different approach to this issue by shutting down the nuclear program while making dramatic policy changes in other areas. Egypt clung more firmly to international non-proliferation norms, advocated for a MENWFZ, and pressured Israel to sign the NPT.<sup>148</sup> The policy towards Israel had changed and nuclear weapons no longer

---

missile and WMD development including chemical and biological weapons. During the Yemeni Civil War Egypt made use of chemical weapons, exported its chemical weapons knowledge to Syria during the 1970s, and provided support to Iraq for its program. It is not believed that Egypt possesses any offensive biological weapons although it is thought it has the technological base necessary.

<sup>145</sup> Rublee, "Leadership Transitions," 61; and Maria Rublee, "Egyptian Nuclear Decision Making," in *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens: University of Georgia Press, 2009), 114, [muse.jhu.edu/book/11398](https://muse.jhu.edu/book/11398). Both in 1962 and 1963 Kennedy asked Nasser to pledge that Egypt would remain non-nuclear. Due to the Soviet Union being an inaugural signatory of the NPT and under IAEA inspection, if Cairo wanted nuclear support from Russia it needed to abide by the NPT.

<sup>146</sup> Ibid., 62.

<sup>147</sup> Khalil Yasso, "Country Nuclear Power Profiles: Egypt," International Atomic Energy Agency, last modified 2015, <https://www-pub.iaea.org/MTCD/Publications/PDF/cnpp2018/countryprofiles/Egypt/Egypt.htm>.

<sup>148</sup> Bahgat, "Egyptian Regional Policy," 164.

fit into the idea of keeping peace with Israel. As Egypt shifted its focus away from the Soviet Union and towards the US, its stagnant nuclear program was an issue it could use as an incentive to encourage America's commitments. A closer relationship with the US was a way to ensure that Sinai would remain under Egyptian control and that Egypt would not see another war with Israel.<sup>149</sup>

There were no significant changes during the Mubarak administration (1981-2011) with the continued focus of Egypt's nuclear policy on creating a MENWFZ, which Egypt formally brought up as a proposal during the 1990 United Nations General Assembly meeting.<sup>150</sup> This was a cornerstone of Egypt's regional policy and a way to try to create a wedge with Israel due to its nuclear opacity. Developing a nuclear energy reactor and continuing nuclear research were not prioritized so progress moved slowly. In 1992 Egypt made an agreement with Argentina to build a second research reactor in Inshas and in 1997 the 22-megawatt reactor was completed.<sup>151</sup> In 2006, under President Mubarak, proposals were made to have functioning nuclear power plants by 2016 and steps were taken such as recruiting scientists and beginning contract negotiations. Egypt formalized its goal of initially building three power plants by 2020. While contracts were signed initially, the events of 2011 and 2013 caused serious economic and security concerns and the plans were put on hold.

When President El-Sisi came to power in 2014 there were questions about whether Egypt would continue the legacy of advocating for a MENWFZ or take a different policy approach. It

---

<sup>149</sup> Ibid., 164.

<sup>150</sup> Rezaei, "Iran's Nuclear Agreement," 186; Bahgat, "A Mideast Nuclear-Weapons-Free Zone," 30.

During the 1990s due to lack of progress towards a MENWFZ, Mubarak broadened the goal to include weapons of mass destruction and shifted focus towards the development of a Weapons of Mass Destruction Free Zone (WMDFFZ) over the MENWFZ.

<sup>151</sup> World Nuclear Association, "Nuclear Power in Egypt," last modified April 2019, <https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/egypt.aspx>; and Bahgat, "Proliferation of Nuclear Weapons in the Middle East," 112.

appears those concerns were unsubstantiated as Egypt continued the push for the region to be free of nuclear weapons. In the area of nuclear energy, the El-Dabaa energy reactor has been a priority and President El-Sisi has been actively attempting to give the project momentum. He sought approval for the location by the IAEA and has set the goal of beginning construction in 2020 with the target of starting operations in 2026.<sup>152</sup>

Domestically, obtaining nuclear weapons is not an issue that has been debated recently. Egypt has been focused on national issues rather than international ones. Since President El-Sisi's rise to office he has continued to take a stance similar to those of his recent predecessors. While the development of building a nuclear plant has been in discussion for decades, recent agreements with Russia and President El-Sisi's commitments indicate that it is likely that progress will continue towards building Egypt's first nuclear energy plant.<sup>153</sup> There is no indication, at this point, whether after the energy program is completed and fully functional Egypt would expand its program to include a militaristic element.

It is speculation whether Egypt's political situation would allow for a smooth transition into becoming a nuclear power. Iran developing nuclear weapons is not a pressing domestic issue and it is unknown if it would cause significant enough concern domestically to become a driver for Egypt to proliferate. Egypt has faced a period of instability and has chosen to focus its attention inwards rather than on external affairs and there is no indication at the moment that it would alter this stance. Changing dynamics could affect this outcome and if tensions between Egypt and Iran were to either increase, or if conditions within Egypt were to shift, the program could be utilized as a tool to unite the country and potentially contribute to the desire for a

---

<sup>152</sup> Aabha Dixit, "IAEA Director General Visits Egypt, Highlights Support for Peaceful Nuclear Energy," IAEA Office of Public Information and Communication, February 5, 2019, <https://www.iaea.org/newscenter/news/iaea-director-general-visits-egypt-highlights-support-for-peaceful-nuclear-energy>.

<sup>153</sup> See page 63 for an outline of the nuclear powerplant agreement between Egypt and Russia.

nuclear weapons program. At this time, it seems unlikely that Egypt would proliferate due to domestic factors, but it appears the conditions are in place to usher in a nuclear weapons program if desired.

### ***External Considerations and Prestige***

Egypt has a long history of abiding by international norms and conventions. It has ratified the NPT and has publicly pushed for a MENWFZ. If Egypt were to veer away from its longstanding stance on nuclear non-proliferation, it could face significant international backlash. Consequences such as changed diplomatic and security relationships could influence Egypt's standing in the world. Egypt and Iran both view themselves as regional powers which has created a rivalry between the two countries that could be exacerbated by Iranian proliferation. While norms about proliferation have changed since the P5 developed nuclear weapons and there are more international consequences for nuclear development, there are still benefits of becoming a nuclear power. Egypt could see Iran's proliferation as an opportunity to mimic its path, increase its standing in the region and globe, and to avoid the perception of being inferior.

After a few attempts to obtain nuclear abilities, Egypt soon realized the challenges related to its feasibility and that it was not in its best interest at that time to become a nuclear power. In July 1968, Egypt signed the NPT but it was not until February 1981 that Egypt ratified it. Egypt clarified its decision to ratify in a statement,

Egypt wishes to point out that it has ratified the Treaty on the Non-Proliferation of Nuclear Weapons out of strong belief that this step complies with its supreme national interests, provided the Treaty succeeds in curbing the proliferation of nuclear weapons throughout the world, particularly in the Middle East, which should remain completely

free of nuclear weapons if it is to contribute constructively to peace, security and prosperity for its people and the world at large.<sup>154</sup>

Egypt had weighed the advantages and disadvantages of nuclear armament and decided it would be in its best interest to embrace international nuclear non-proliferation norms that had been strengthening over the previous decades and to achieve its aims by fighting for nuclear non-proliferation.

The delayed ratification of the NPT can be, at least in part, attributed to Egypt's relationship with Israel and its desire to use the ratification as a bargaining chip. Rublee argued, "the NPT is a diplomatic tool with which to harass and pressure Israel."<sup>155</sup> Likewise, Egypt continued to use its lack of nuclear weapons not only to put pressure on Israel, but also as a tool to leverage the US into greater trade and aid agreements in exchange for adhering to non-proliferation norms and keeping peace with Israel.<sup>156</sup> At least for the time being, Egypt has continued to place importance on the NPT and the norms of non-proliferation. Its main criticisms remain rooted in its concerns over Israel's nuclear weapons and Egypt is still trying to put pressure on Israel by refraining from signing the Additional Protocol (AP) until Israel signs the NPT.<sup>157</sup>

North Korea's recent proliferation, despite protest from nearly all major powers, has been a challenge to the idea that nuclear proliferation can be stopped.<sup>158</sup> A second country with

---

<sup>154</sup> United Nations Department for Disarmament Affairs, "Egypt: Ratification of Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," 26 February, 1981, <http://disarmament.un.org/treaties/a/npt/egypt/rat/london>.

<sup>155</sup> Rublee, "Leadership Transitions," 67.

<sup>156</sup> Hobbs and Moran, "Domestic Uncertainty, Nuclear Consistency," 45.

<sup>157</sup> Fitzpatrick, "Will Nuclear Energy Plans," 383; and International Atomic Energy Agency, "Safeguards Legal Framework: Additional Protocol," accessed February 11, 2019, <https://www.iaea.org/topics/additional-protocol>. The AP is an IAEA safeguard agreement which "significantly increases the IAEA's ability to verify the peaceful use of all nuclear material in states with comprehensive safeguards agreements."

<sup>158</sup> Rublee, "Leadership Transitions," 54.

nuclear weapons in the Middle East would significantly undermine the already weakened nuclear non-proliferation regime. It is possible that if Iran were to develop nuclear weapon capabilities and Israel were to change its status of ambiguity to something more overt, Egypt would withdraw its adherence to the NPT on the basis of the failure of the NPT to prevent further proliferation in the Middle East and the poor efforts of the nuclear states to reduce their weapons and work towards eventual nuclear disarmament.<sup>159</sup>

Egypt would likely face international reprisal if it decided to proliferate. Nuclear pursuit would likely erode international ties and effect the aid that Egypt receives. Egypt's economic situation has led to a heavy dependence on the wealthy Gulf states and Western powers. This could be devastating especially if foreign aid and investment were to reduce. Therefore, retaining positive relations with these nations has become a top priority for Egypt.

One such relationship that would most likely suffer if Egypt changed its stance is its relationship with the US. Since 1946, the US has provided Egypt with over \$83 billion in bilateral foreign aid.<sup>160</sup> These commitments became more established after the 1979 Egypt-Israel Peace Treaty with the understanding that the aid would continue so long as "the Secretary of State certifies that the government of Egypt is sustaining the strategic relationship with the US and meeting its obligations under the 1979 Egypt-Israel Peace Treaty."<sup>161</sup> While aid is not guaranteed and the amount has varied greatly from year to year fluctuating from massive investments to a complete cut off in the two years following the 2013 uprising, the security relationship and legacy of economic aid has continued.<sup>162</sup> Regardless of the short and long term disadvantages, Egypt has continued to seek, accept, and rely on this aid. In 2018 the US provided

---

<sup>159</sup> Hobbs and Moran, "Domestic Uncertainty, Nuclear Consistency," 48.

<sup>160</sup> Sharp, "Egypt: Background and U.S. Relations," Introduction.

<sup>161</sup> Ibid., 19.

<sup>162</sup> Monshipouri and Zmary, "Re-evaluating Iran-Egypt Relations," 223.

\$1.23 billion in foreign aid to Egypt with 81% of this aid allocated to the Egyptian Department of Defense as military spending and pledged roughly \$1.4 billion in aid for 2019.<sup>163</sup>

Egypt similarly views Saudi Arabia as an important ally, investor, and trade partner and Egypt's struggling economy benefits from Saudi financial aid.<sup>164</sup> To make the relationship reciprocal, Saudi Arabia expects Egypt's support on various issues including its concerns about Iran.<sup>165</sup> These dynamics have been put to the test during the Syrian Civil War in which Iran has been a strong supporter of President Bashar Al-Assad, and Saudi Arabia has been against the regime.<sup>166</sup> Ignoring Saudi Arabia's expectation for supporting its stance, Egypt decided to support President Assad. Monshipouri and Zmary suggested that perhaps Egypt wishes to keep President Assad in power. They argued, "Just like Iran, Egypt fears that the fall of Assad will give rise to an empowered Muslim Brotherhood leadership position."<sup>167</sup> If President Assad were no longer in power, it might allow a fundamentalist Sunni regime to take over and lead to a resurgence of the Muslim Brotherhood. Likewise, Saudi Arabia's support of other groups that are affiliated with the Muslim Brotherhood has solidified these concerns and has been an area of contention between the two countries. The combination of these pre-existing stressors with the addition of either nation developing nuclear weapons would alter their relationship and would likely cause economic harm to Egypt. An alternative would be if Egypt proliferated and decided

---

<sup>163</sup> "Egypt: Foreign Assistance," Foreign Assistance.gov; Sharp, "Egypt: Background and U.S. Relations," background; and USAID, "Egypt," Foreign Aid by Country, USAID Foreign Aid Explorer, last modified June 13, 2019, [https://explorer.usaid.gov/cd/EGY?measure=Obligations&fiscal\\_year=2018](https://explorer.usaid.gov/cd/EGY?measure=Obligations&fiscal_year=2018).

<sup>164</sup> Saudi Press Agency, "Saudi Aid worth \$33 Billion for 78 Countries and Yemen in the Top of the List," SPA, June 21, 2018, accessed Feb 18, 2020, <https://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=1777850>. Egypt has received \$2 billion USD in foreign aid from Saudi Arabia between 2007-2017. At various times over the past decade Saudi Arabia has pledged aid to Egypt, some of which Egypt has received in various forms and others which due to conflict between the countries was halted.

<sup>165</sup> Monshipouri and Zmary, "Re-Evaluating Iran- Egypt Relations," 220.

<sup>166</sup> "Egypt-Saudi Arabia: Allies in Rare Public Row," *Africa Research Bulletin: Political, Social and Cultural Series* 53, no. 10 (2016): 21200, <https://doi.org/10.1111/j.1467-825X.2016.07335.x>.

<sup>167</sup> Monshipouri and Zmary, "Re-Evaluating Iran- Egypt Relations," 222.



to mollify negative reactions by offering some form of formal or informal regional nuclear protection towards Saudi Arabia and other friendly Gulf States.

If Egypt were to pursue the development of nuclear weapons, it could derail the peace agreement with Israel, halt America's support, and result in instability in the region. This would impact Egypt both economically and diplomatically. Aid ceased already once in the past decade for political reasons so this would certainly be the first consequence of many. Instead Egypt has taken a diplomatic approach as Monshipouri and Zamyar noted,

Sisi has taken a foreign policy approach aimed at safeguarding his regime, expanding its freedom of movement, and diversifying its sources of foreign assistance... As such, Egypt will seek to build simultaneous relations with rival global and regional powers, hoping to buttress its regime survival and political maneuverability in an ever-more fragmented region.<sup>168</sup>

It is unlikely that if Egypt is focusing on a strategy of diplomacy and further international integration that it would jeopardize its international standing by proliferating regardless of the threat of Iran. At present, it seems that Egypt will gain more from keeping its strong ties to the international community by abiding by nuclear non-proliferation norms and the NPT.

Egypt and Iran are the two most populous countries in the Middle East and are the birth places of two of the oldest civilizations in the world.<sup>169</sup> Both nations have rich histories and made many contributions to science, religion, architecture, and art. Their histories have been a source of pride and have contributed to reinforcing a firm sense of nationalism in both countries.<sup>170</sup> In Egypt, "most Egyptians perceive their country as the leading Arab state and claim, with some credibility, the status of a regional power,"<sup>171</sup> making any other regional power

---

<sup>168</sup> Ibid., 223.

<sup>169</sup> The World Bank, "Total Population," (Washington, D.C.: The World Bank) accessed July 31, 2019, <https://data.worldbank.org/indicator/SP.POP.TOTL?view=chart>.

<sup>170</sup> Gawdat Bahgat, "Egyptian Regional Policy," 160.

<sup>171</sup> Ibid., 160.

attempting to increase its status appear to be an adversary. In Iran, "...many Iranians believe, with some justification, that foreign powers (including Russia, Britain, and the United States) have conspired to deny them their "natural" status as the dominant power in the Middle East."<sup>172</sup>

This has led to a natural, although unspoken, rivalry between the two countries. While their relationship has managed to stay away from sectarian differences for the most part, this remains an underlying contention.<sup>173</sup> Egypt is the largest Sunni majority nation in the Middle East and is a leader in the region through its production of Arabic literature, film, television, scientific developments, and education.<sup>174</sup> Iran is the nation with the largest Shia population and is the center of Persian history and culture.

Iran possessing nuclear weapon capabilities would challenge Egypt's status as a regional leader and lead to a feeling of inferiority and loss of prestige in Egypt. However, Egypt has a strong conventional military force and remains an influential leader in the region so it is possible that Iranian proliferation may not make much of an impact. Procida argued, "Further, Egypt traditionally has been confident that its history, culture, and geostrategic location provide it with outsized influence, suggesting that- the regime's private rhetoric to U.S policy makers notwithstanding- Cairo might instead respond to an Iranian nuclear capability with a shrug."<sup>175</sup> Egypt valuing its prestige and place in the region and international community may draw closer to international non-proliferation norms as a way to differentiate itself from Iran and to identify itself as a stable, rational country to increase its global standing.

---

<sup>172</sup> Ibid., 160.

<sup>173</sup> Hobbs and Moran, "Domestic Uncertainty, Nuclear Consistency," 43. Egypt is Sunni majority, while Iran is Shia majority.

<sup>174</sup> Bahgat, "Egyptian Regional Policy," 162.

<sup>175</sup> Procida, "Nuclear Dominoes: Real or Imagined?" 466.

Egypt's sees its integration in the international community as crucial to its goals and given the last decade's political instability, it is currently trying to restore the appearance of stability and dependability to increase its influence and economic position. Iran developing nuclear weapons could result in Egypt facing embarrassment due to its reduced reputation as a leader of the Arab world. This could prompt Egypt to examine its policy towards nuclear weapons and how they would positively or negatively effect its standing in the region and globe. Despite the reduced prestige that would result, based on Egypt's recent and long-established strategies that have been built on non-proliferation norms, it appears that external considerations and prestige would most likely not instigate a change in policy and it would be unlikely that Egypt would proliferate on this basis.

### ***Economic and Technological Feasibility***

There are two main challenges to the feasibility of developing nuclear weapon capabilities. First, there is the enormous upfront economic expenditures, along with the continued cost of maintaining a nuclear arsenal once developed. Second, there are the technical challenges of developing the various parts of the fuel cycle, such as creating highly enriched uranium, having a working warhead design, and delivery devices.<sup>176</sup> These abilities would take significant time and effort to obtain and it is unlikely that Egypt would be able to develop the capability in the short term. If prioritized however, it would be a feasible project in the long term.

Nuclear programs are extremely expensive with countries spending billions on their production and maintenance. After its war with India, it is estimated that Pakistan spent around \$5 billion on its nuclear program. India testing its first nuclear device created an urgency within

---

<sup>176</sup> Dana Allin and Steven Simon, *The Sixth Crisis: Iran, Israel, America and the Rumors of War* (New York: Oxford University Press, 2010), 21.

Pakistan to complete its own test, “Pakistani Prime Minister Zulfikar Ali Bhutto pledged that his country would do no less. Pakistanis, he promised, might eat grass, but we will build a bomb.”<sup>177</sup> Fifty years later, the costs of developing a program have only increased. It is very difficult to create even a rough estimate of the costs of nuclear weapons programs as the nations that have proliferated recently have not shared their expenditure information. Variables such as pre-existing civilian nuclear infrastructure, raw resources, human capacity, and delivery systems all need to be considered. Program cost estimates range wildly from a few billion to hundreds of billions of dollars, with the only common consensus being that nuclear weapons are expensive, and the financial burden of a program is high.

Egypt holds some oil and significant natural gas reserves, but its increased domestic demand for energy due to its growing population, years of subsidized oil and gas, and high consumption rates have resulted in Egypt having a higher rate of consumption than production. Additionally, Egypt ships a large amount of natural gas to Israel each year; a decision that many Egyptians are against and has been a target of terrorist attacks.<sup>178</sup> Egypt’s other energy source, the Aswan High Dam, used to supply half of Egypt’s energy, but, due to increased consumption, it is now only able to supply approximately 15% of the country’s energy.<sup>179</sup> The result has been power cuts and the removal of oil and gas subsidies. This energy deficit could be filled by Egypt creating nuclear power reactors, and as a legitimate justification of building up its civilian nuclear infrastructure.

Egypt is in the process of creating its first nuclear energy reactor which is predicted to be able to provide as much as 50% of Egypt’s energy needs once completed and fully

---

<sup>177</sup> Mohammed Ahmedullah, “Let ‘Em Eat Nukes: Economic Effects of Armament by India and Pakistan,” *Bulletin of the Atomic Scientists* 56, no. 5 (2000): 54, <https://doi-org.uml.idm.oclc.org/10.1080/00963402.2000.11456994>.

<sup>178</sup> Bahgat, “Egyptian Regional Policy,” 166.

<sup>179</sup> Rezaei, “Iran’s Nuclear Agreement,” 187.

functioning.<sup>180</sup> This development is significant for Egypt as it will allow it to expand its nuclear abilities, create energy self-sufficiency, and utilize its indigenous technology for future nuclear projects once completed. Egypt was unable to finance the construction of the proposed plan alone and in 2015 Egypt and Russia signed a bilateral agreement for Russia to supply and finance 85 % (\$26 billion) of the total cost of the project with Egypt financing the remaining cost. Egypt will begin paying back the loan starting in 2029 and will continue to pay back the loan over the proceeding twenty-two years with an interest rate of 3% annually.<sup>181</sup>

Although this is by no means the extent of the necessary infrastructure required for a nuclear program, it would give Egypt a stronger foundation to build upon, if it eventually decided to invest in a weapons program. The program would still be very costly, and it is unlikely that Egypt would be able to finance the whole program with its current expenditure allocations, especially given Egypt's dependence on trade, foreign investment, and aid which would likely diminish greatly. India and Pakistan, two of the most recent countries to proliferate, spent enormous amounts of money on their nuclear programs to increase their nations' security. They thought that nuclear development would reduce the need for conventional military strength, and thus be able to allocate more resources towards economic development. Commenting on the economic situation just a few years after the nuclear tests in India and Pakistan, Ahmedullah, an Indian scholar, noted "If anything, Pakistan and India are less secure. Their currencies are weaker and economic growth has declined, unemployment increased, and investment stagnated."<sup>182</sup> Moreover, in the period following their proliferation, foreign investment and aid

---

<sup>180</sup> "Site Approval for Egyptian Nuclear Power Plant," World Nuclear News, April 10, 2019, <http://world-nuclear-news.org/Articles/Site-approval-for-Egyptian-nuclear-power-plant>.

<sup>181</sup> Steve Thomas, "Russia's Nuclear Export Programme," *Energy Policy* 121 (2018): 244, <https://doi.org/10.1016/j.enpol.2018.06.036>.

<sup>182</sup> Ahmedullah, "Let 'Em Eat Nukes," 53.

were at an economic low point. Egypt following a similar path could likewise expect to experience a period of reduced aid, investment, and economic hardship.

Egypt's nuclear quest started in the 1950s with the desire to build a nuclear weapons program, but it wasn't until 1961 that Egypt opened its first 2 megawatt light-water research reactor in Inshas, which was supplied by the Soviet Union and ran on 10% enriched uranium.<sup>183</sup> The reactor has not always been functional and had to be shut down in the 1980s for renovations. In 1968, Egypt signed the NPT essentially halting any components of a nuclear weapons program that it had. After ratifying the treaty in 1981, Egypt sought to develop its civilian nuclear program and to take advantage of the NPT's Article IV, Section 2, which states:

Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.<sup>184</sup>

Signing the treaty meant that Egypt would have a much higher probability of international support for its nuclear energy program.

During the 1980s, El-Dabaa was chosen as the site for a potential nuclear energy reactor, but due to events such as the Chernobyl disaster and Egypt's political crisis, momentum was slow. In 2016, there was another push for the development of the nuclear reactor at El-Dabaa, and, as explored earlier in this section, a deal was made with Russian state-owned company Rosatom. The plans for the El-Dabaa reactor have slowly progressed with both Egypt and the IAEA on board with the current plans to build the first of four proposed nuclear powerplants at

---

<sup>183</sup>Ahmed Konsowa, Ayman Mosallam, and Ehab Hanafi, "Advanced Construction Process for Modern Nuclear Power Plants," *International Journal of Arts & Sciences* 5, no. 6 (2012): 87, <http://search.proquest.com/docview/1366064853>.

<sup>184</sup> The United Nations, "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," Article IV. 2.

this site. Within Egypt, the site has been approved and Egypt has requested an IAEA review, with the hopes of obtaining the remaining regulatory approval to begin construction on the first reactors in July 2020, with the goal to be operational in 2026.<sup>185</sup> Once operational, the possession of the highly advanced generation 3+ plant would make Egypt a leader in nuclear technology in the region.<sup>186</sup>

Egypt's already established nuclear infrastructure and research centers provide Egypt with the technical expertise necessary to establish a robust nuclear science program at Cairo University and the theoretical academic ability for Egypt to expand its nuclear program. Coupled with its uranium reserves, it has led critics to be concerned that Egypt may eventually take advantage of the dual use nature of nuclear technology and use it militarily.<sup>187</sup> President El-Sisi has stated that the facility would be only used for peaceful purposes, but, given that Egypt has not signed the AP, it has increased concerns that eventually the El-Dabaa plant could house a parallel weaponization program. However, as Hobbs and Moran highlighted "it would be wrong to assume that a nuclear energy programme automatically lowers the technical barriers to nuclear proliferation."<sup>188</sup> Egypt has been unsuccessful at building a nuclear power reactor despite

---

<sup>185</sup> Dixit, "IAEA Director General Visits Egypt."

<sup>186</sup> Rezaei, "Iran's Nuclear Agreement," 187; and Stephen Goldberg and Robert Rosner, *Nuclear Reactors: Generation to Generation* (Cambridge: American Academy of Arts and Sciences, 2011), 7, <https://www.amacad.org/sites/default/files/publication/downloads/nuclearReactors.pdf>. Generation 3+ reactors have greatly increased safety features, better fuel efficiency, and are predicted to last significantly longer than previous generation reactors. They are the most advanced generator type currently available but are also known to produce larger amounts of spent fuel and are significantly more expensive thus generation 2 reactors are still the most common reactor and are seen as the economical choice.

<sup>187</sup> T. A. Sayyah, and H. M. El Shatoury, "Uranium resources and reserves in Egypt," in *Assessment of Uranium Resources and Supply: Proceedings of a Technical Committee Meeting* (Vienna: International Atomic Energy Agency (IAEA), 1991), 67, [https://inis.iaea.org/search/search.aspx?orig\\_q=RN:22068681](https://inis.iaea.org/search/search.aspx?orig_q=RN:22068681); and Rublee, "Leadership Transitions," 65. Egypt has multiple reserves of uranium in the Eastern Desert, Sinai and the Western Desert. Egypt has yet to invest in extraction or mining, but it is believed they could contain as much as 250 000 tons of uranium.

<sup>188</sup> Hobbs and Moran, "Domestic Uncertainty, Nuclear Consistency," 50.

decades of attempts and even if established it would still need to make significant advances in order to have a working nuclear weapons program.<sup>189</sup>

If Egypt is able to find the economic resources, Egypt could have the option to partner with a nuclear power such as Pakistan to help gain the necessary technology. Abdul Qadeer Khan, known as the ‘father of the Pakistani bomb’ was instrumental in advancing Pakistan’s nuclear program, as well as those of Iran, Libya, and North Korea through the illegal sale of nuclear technology.<sup>190</sup> Egypt could likewise seek both front and back door channels to acquire nuclear technology if it so desired.

With regard to delivery systems, Egypt currently has a small arsenal of short-range ballistic and cruise missiles (SRBMs).<sup>191</sup> Its missile arsenal is thought to be aging and it is not suspected that it has been making strides towards possessing longer range missiles. Although Egypt can produce some components of missiles indigenously, it depends on outside assistance for producing some of the more advanced components.<sup>192</sup> Egypt relies heavily on arms imports and has made numerous deals in the past with countries including the US, China, Russia, and France. It is possible that if Egypt were to desire intermediate-range ballistic missiles (IRBMs), it could look to countries such as China to purchase them. While Egypt has one of the strongest militaries in the Middle East, it does appear that Egypt would need to make significant improvements to its arsenal to be able to use nuclear weapons strategically.

---

<sup>189</sup> Rezaei, “Iran’s Nuclear Agreement,” 187.

<sup>190</sup> Khan was the founder of the nuclear enrichment program in Pakistan and he was instrumental in Pakistan’s ability to create nuclear weapon capabilities. Khan confessed to the illegal selling and smuggling of nuclear technology and material into Iran, Libya, and North Korea.

<sup>191</sup> Nuclear Threat Initiative, “Egypt: Missile,” last modified January 2015, <https://www.nti.org/learn/countries/egypt/delivery-systems>. Egypt’s arsenal is thought to include R-300 (SS-1-C Scud-B), Project-T (Scud B-100), Scud-C, R-70 Luna M (Frog-7B), Sakr-80, RGM-84L Harpoon-2 and HY-2 and SY-1 ASCMs, and HY-2 missiles.

<sup>192</sup> Ibid.



Overall, Egypt has been interested in nuclear power for decades and has worked with the IAEA and international companies to develop the basic technological and human capacity to develop its nuclear energy program. Even if Egypt manages to develop its civilian nuclear reactors, this foundation is incomplete and inadequate for the technology and infrastructure that is required to have a working nuclear weapons program. Egypt would need to be able to master all areas of the nuclear fuel cycle, develop the necessary weapons technology, and have the ability to pair the weapons to delivery devices. All these steps would cause significant financial strain on Egypt and it would be difficult for Egypt to develop functioning nuclear weapons especially if economic aid is cut off. It is possible that if Egypt were to prioritize the initiative it could slowly develop a program over time, but due to its current lack of advanced infrastructure and its financial difficulties it would be challenging.

### ***Conclusion***

Examining Egypt's security challenges, domestic situation, external conditions, and the feasibility of developing nuclear weapons through the lens of Iranian proliferation can give insight into the likelihood of Egypt proliferating. Concerning security, Egypt has been focused on building security relationships, regional stability issues, and its own internal security struggles. Therefore, while Iran is a distant threat, Egypt may decide to act cautiously to defend its interests. Conversely, the changed security environment that would result from another nuclear weapons state and Israel's reaction to Iran's proliferation may be enough of a concern for Egypt to desire the same capability. Egypt's historic actions indicate that this would be unlikely.

Domestically Egypt has faced nearly a decade of instability following its 2011 Revolution, which could either enable the government to easily unite Egypt for the common goal

of developing nuclear weapons, or be a motivation to avoid anything that could create instability and disrupt the status quo. The domestic situation in Egypt may not drive it to proliferate, but if desired, it would most likely ease its feasibility.

Externally, Egypt has focused its efforts on developing and maintaining positive relations with other nations through upholding nuclear non-proliferation norms. Seeking nuclear weapons development would be a major deviance from its current approach to how it deals with foreign affairs, which most likely would result in international backlash. On the other hand, due to Egypt and Iran's political rivalry, Egypt may wish to pursue nuclear weapons to increase its prestige and to gain power and status. It appears more likely that Egypt would continue to abide by international non-proliferation norms out of concern over jeopardising its position in the international community.

While Egypt has some of the human capacity, technology, and infrastructure necessary to build a nuclear weapons program, it is a meager base that would need to be substantially built upon. In order to engineer a nuclear weapons program Egypt would need to make the project its economic priority and it would be very expensive for the nation. If Egypt can overcome the feasibility challenge of a nuclear program is unknown, but it is certain that the task will be a giant hurdle for Egypt if it decides to prioritize nuclear weapons development.

Overall, these factors combined indicate that Egypt's decision to proliferate would be complex and dependant upon several variables being in place. Iran proliferating may contribute to Egypt's decision, but it appears that it would be an insufficient driver. Unless these variables change, it is unlikely that Iran possessing nuclear weapons would spark nuclear proliferation in Egypt.

## **Chapter IV**

### **Saudi Arabia**

Saudi officials have indicated numerous times that if Iran developed nuclear weapons, Saudi Arabia would respond by also developing the same capabilities. This has increased fears that Iranian proliferation would spark a cascade of new nuclear powers in the Middle East. While some with positions of authority in Saudi Arabia have made these remarks, it is unknown how the nation would actually respond. Saudi Arabia would reap benefits if it decided to proliferate, but there would also be many disadvantages and it would need to decide if becoming a nuclear power would be the most advantageous course of action. There are some indicators that Saudi Arabia may pursue nuclear weapon capabilities and the addition of Iranian proliferation could increase the likelihood of its occurrence. However, there are other factors that would suggest nuclear restraint. Examining Saudi Arabia's current security concerns; internal considerations; external considerations and prestige; and economic and technological abilities along with how these factors would be affected by Iranian proliferation can provide insight into the likelihood of Saudi Arabia proliferating, and subsequently, insight into the utility of the theory of cascading proliferation in the Middle East.

#### ***Security Concerns***

Iran and Saudi Arabia are rivals and the prospect of Iran proliferating could influence Saudi Arabia's decision to proliferate. Nuclear weapons are the strongest and most powerful weapons and the countries currently possessing them feel they are a great security asset. Thus, it would be logical that having them would also be a security asset for Saudi Arabia. Ownership of nuclear weapons would allow Saudi Arabia to increase its security, defend itself against major

external threats by utilizing them as a deterrent against nuclear attacks, avoid the possibility of nuclear blackmail or compellence, and use the threat of developing nuclear capabilities as a bargaining chip to leverage better security assurances. Exploring the relationship between Saudi Arabia and Iran along with the potential security advantages and disadvantages of Saudi Arabia developing nuclear weapons as a result of Iranian proliferation will show whether security factors are a significant enough concern to drive Saudi Arabia to proliferate.

Modern Saudi Arabia and Iran have experienced a fluctuating relationship defined by competition both in terms of ideology and geopolitics which have endured over the last century.<sup>193</sup> Before the creation of Saudi Arabia when Ibn Saud took control over both the central region of Nejd and the Hejaz, Persia refused to recognize the new state under Ibn Saud. Areas of contention included concerns over interference in domestic and regional affairs, the status of Bahrain, and the control of the Islamic holy sites of Mecca and Medina. While some disagreements, such as the control over the Persian Gulf region remained, in 1929 an agreement between the two nations led to the Saudi-Iranian Friendship Treaty.<sup>194</sup> The nations experienced a period of relative neutrality continuing through Persia's Pahlavi reign from 1941 until the Iranian Revolution in 1979, with the nations choosing to focus on their mutual foundation of being governed by Islamic law and their distrust of socialist influences in the region.<sup>195</sup>

After the 1979 Iranian Revolution, King Khalid bin Abdulaziz Al-Saud of Saudi Arabia issued a statement recognizing the revolution and his continued desire for an ongoing relationship based on the two nations' mutual Islamic foundations.<sup>196</sup> The following decade did

---

<sup>193</sup> Simon Mabon, *Saudi Arabia and Iran: Soft Power Rivalry in the Middle East* (London: I.B. Tauris, 2013), 4.

<sup>194</sup> Al- Badi, "Saudi-Iranian Relations," 189.

<sup>195</sup> Al- Badi, *Saudi-Iranian Relations*, 193.

<sup>196</sup> *Ibid.*, 193.

not see any progress. In 1988 a major setback occurred after clashes between Saudi authorities and Iranian demonstrators on Hajj (the Islamic pilgrimage), which resulted in the deaths of over four hundred people in Mecca, the majority of whom were Iranian. The aftermath of the incident led to Saudi Arabia severing relations with Iran.<sup>197</sup> This incident accentuated the ongoing debate between the two main divisions of Islam, with Saudi Arabia claiming the birthplace of Sunni Islam, and Iran asserting itself as the global Shia leader.<sup>198</sup> Relations remained stagnant until the death of Ayatollah Khomeini a year later. After Iran's change in leadership, events such as their shared support of Kuwait during its invasion by Iraq proved that cooperation between the two countries was mutually beneficial.<sup>199</sup> Relations formally resumed in 1991 with an emphasis on ensuring economic stability by solving differences related to oil production through the Organization of the Petroleum Exporting Countries (OPEC) and by creating the bilateral 1998 Cooperation Agreement and a 2001 security accord.<sup>200</sup>

After 9/11 and the subsequent American invasion of Iraq, there was a shift of power in the Gulf where the historic Iran-Iraq balance of power was lost, which resulted in a power vacuum in the region. Saudi Arabia decided to join the American "War on Terror" and tried to repair the damages that occurred to the American-Saudi relationship after it was revealed that the majority of the perpetrators of the attack were Saudi nationals, and a large extent of the funding was provided by Saudi citizens. Iran, on the other hand, had to face the international implications

---

<sup>197</sup> Ibid., 194.

<sup>198</sup> Gawdat Bahgat, "Nuclear Proliferation: The Case of Saudi Arabia," *Middle East Journal* 60, no. 3 (2006): 430, <https://doi.org/10.3751/60.3.11>.

<sup>199</sup> Umer Karim, "The Evolution of Saudi Foreign Policy and the Role of Decision-Making Processes and Actors," *The International Spectator* 52, no. 2 (2017): 75, <https://doi.org/10.1080/03932729.2017.1308643>.

<sup>200</sup> Al- Badi, "Saudi-Iranian Relations," 197.

of its nuclear program being exposed and of being labeled as part of former American President George W. Bush's "axis of evil."<sup>201</sup>

Other issues still affecting their relationship have included differing economic interests regarding oil production, land sovereignty disputes, particularly those with the three Emirati islands of Abu Musa, the Greater Tunb, and the Lesser Tunb, differing approaches to the Palestinian-Israeli conflict, the Iraq War, Gulf security, and the conflict in Yemen. More recently, the discovery of Iran's nuclear program also affected its relationship with Saudi Arabia.<sup>202</sup> This became particularly pertinent given their contentious history and Iran's development of medium range ballistic missiles (Shahab-3), which have a range that could easily reach all of Saudi Arabia including its capital.<sup>203</sup>

Saudi Arabia has long viewed Iran as a meddler in Arab affairs. Iran has also historically supported sectarian non-state actors such as Hezbollah and Hamas to spread its influence and advance its goals in the region, most of which are contrary to Saudi Arabia's.<sup>204</sup> Often Iran's intentions have been to try to change political outcomes such as within Iraq where, contrary to Saudi interests, Iran pushed for Shia leadership in the country. The export of revolution and use of sectarianism to expand its agenda is greatly concerning to the Kingdom and reciprocally Iran views Saudi Arabia spreading its interpretation of Islam, Wahhabism, to be an instigator of conflict in the Middle East.

The Syrian Civil War highlighted another divergence between the two nations with Tehran a strong supporter of President Assad, and Riyadh in support of the uprising. Reports of

---

<sup>201</sup> Ibid.,198.

<sup>202</sup> Ibid., 196.

<sup>203</sup> Fitzpatrick, "Nuclear Energy Plans," 382.

<sup>204</sup> Karim, "Evolution of Saudi Foreign Policy," 83.

Iran supporting the Houthis rebels in Yemen further added to this divide, which escalated in 2015 when the two countries fought a proxy war in Yemen where Saudi Arabia attempted to cripple the anti-Saudi Houthi militia. Saudi Arabia has viewed Iran's connection to the Shia Houthis in Yemen and involvement in the conflict as an attempt to undermine Saudi security. Iran perceives the rebellion in Yemen to be a righteous and natural reaction to the marginalization of the Houthis and has blamed Saudi Arabia for its intervention.<sup>205</sup> In 2016, Al-Badi stated, "Now, three years into the presidency of Hassan Rouhani and Saudi-Iranian relations are at their most dangerous stage in the history of these relations with escalating media, diplomatic and proxy wars."<sup>206</sup> Relations between Saudi Arabia and Iran continue to be poor and there is no indication that this will change anytime in the near future. Understanding the security relationship between the two countries allows one to conceptualize the other security variables within its historic context. With this contextual background established, the remainder of the security section explores the security benefits and drawbacks of Saudi Arabia proliferating as a result of Iranian nuclear proliferation.

Geographically Saudi Arabia is the largest Persian Gulf country and borders all of the inland Gulf countries except for Iran. Although it has a vast amount of land compared to Iran and other nations in the region, its population is significantly lower at 32.9 million compared to Iran's 81.2 million.<sup>207</sup> Due to its geographic location yet smaller population and lack of military strength, it is relatively vulnerable to attack without foreign assistance. A nuclear Iran could become a security threat for the nation given their long history of rivalry, and developing nuclear weapons could safeguard against Iranian aggression. Saudi Arabia could thus seek out nuclear

---

<sup>205</sup> Ibid., 79.

<sup>206</sup> Al- Badi, "Saudi-Iranian Relations," 202.

<sup>207</sup> The World Bank, "Total Population."

weapons in two ways, either through extended deterrence by seeking a formalized security commitment from another nation, or through developing its own weapons.

Saudi Arabia could use steps towards proliferation to try to encourage a better or more stable security deal including trying to leverage the US to extend formally its nuclear umbrella. Agreements to place an American nuclear base on Saudi soil may be enough to deter a threat from Iran, but it would increase tensions between Saudi Arabia and other Middle Eastern countries and may be perceived as bending to the West. Moreover, it could anger Islamic fundamentalists both inside and outside the nation for allowing the US to have an even stronger hold on the land that hosts their most revered sites. For this reason, if Saudi Arabia were to partner with the US, a sea-based system that is quietly acknowledged may be the more likely course of action. This could be a realistic option if it provided a convincing enough deterrent similar to its provisions to Germany during the Cold War.<sup>208</sup>

Even in the case of the US formally extending its nuclear umbrella to include Saudi Arabia, it is debatable how reliable that protection would be, and whether it would be a sufficient equalizer. America's security assurances may not be dependable, and it would be Saudi Arabia that would pay the price if the assurances proved to be unreliable. Deciding to pursue at least latent nuclear power without creating weapons may allow the flexibility for Saudi Arabia to rapidly build nuclear weapons if the relationship with Iran deteriorated further, or a credible threat emerged.

---

<sup>208</sup> Anthony Cordesman, *Saudi Arabia: National Security in a Troubled Time* (Santa Barbara: Praeger Security International, 2009), 253; and Beatrice Heuser and Kristan Stoddart, "Difficult Europeans: NATO and Tactical/Non-Strategic Nuclear Weapons in the Cold War," *Diplomacy & Statecraft* 28, no. 3 (2017): 456, <https://doi.org/10.1080/09592296.2017.1347446>. During the Cold war, in addition to the theatre nuclear weapons the US stationed on European soil, the US also utilized submarine based Polaris missiles. These nuclear armed submarines were used as a deterrent to protect Europe, including Germany, from attack from Warsaw Pact forces and the Soviet Union.



There are many variables Saudi Arabia must consider when deciding whether proliferation is in its best interest. While there are benefits, there are also security drawbacks both in the attempt, and if actual proliferation occurred. These concerns could entail the loss of its security relationship including the US, the risk of pre-emptive strikes, concerns over benefits to its security situation, and the destabilizing effect that a third nuclear power, following Iran, in the region could create, including the emergence of even more nuclear powers.

The most commonly cited argument for why Saudi Arabia would not develop nuclear weapons is that doing so would damage its relationships, including with the US, and as a result it would lose some of the security assurances gained from the positive relationship. While there is no official security alliance between Saudi Arabia and the US, the two countries share many common goals, have worked closely together, and have developed a friendship based upon a history of mutual interests.<sup>209</sup> This includes a number of very large arms trade agreements. In 2017, it was estimated that the US exported 3.4 billion dollars worth of arms to the Kingdom. According to the Bureau of Political-Military Affairs,

Saudi Arabia is the United States' largest foreign military sales (FMS) customer, with over \$114 billion in active cases. With the signing of the May 2017 \$110 billion agreement to pursue Saudi Armed Forces modernization by President Trump and King Salman, we expect a significant increase in FMS and DCS cases.<sup>210</sup>

As power dynamics in the Middle East change, Saudi Arabia continues to view the US as a key diplomatic, security, and economic partner.

---

<sup>209</sup> Naser Al-Tamimi, "Will Riyadh Get the Bomb?" *Middle East Quarterly* 20, no. 2 (2013): 56, <http://uml.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=85845488&site=ehost-live>.

<sup>210</sup> U.S. Department of State, *Security Cooperation with Saudi Arabia Fact Sheet*, U.S. Bureau of Political-Military Affairs, (January 2019), accessed February 2, 2019, <https://www.state.gov/t/pm/rls/fs/2019/288671.htm>.

There is little doubt that the relationship between the US and Saudi Arabia would be affected if Iran proliferated. As there is no formal promise of extending America's nuclear umbrella to Saudi Arabia, a formal agreement between the two countries could calm some of Saudi Arabia's fears about security and could persuade Saudi Arabia to halt any progression towards nuclear weapons development. This is the most likely response from the US and if such an agreement was reached, it is speculated that the US would require Saudi Arabia to forgo any actions that could lead to proliferation. If Saudi Arabia successfully developed nuclear weapons it would no longer need to rely on the US for security assurances, but if it failed to proliferate this could challenge their relationship resulting in the potential loss of a security asset.

If relations were to deteriorate between the US and Saudi Arabia, other nations such as Russia or China may be interested in stepping in by formalizing weapons deals and security agreements. While China would not be able to offer the same level of assurance as the US, it may see the advantage of having a security relationship with Saudi Arabia both for economic and security reasons.<sup>211</sup> Pakistan has also proven to have a strong security relationship with Saudi Arabia as exemplified in 2011 when Saudi Arabia requested help from Pakistan if the Bahraini uprising were to spread to the Shia population inside the Kingdom.<sup>212</sup> The security relationship with the US would be missed, but Saudi Arabia has other relationships it can strengthen and rely on.

Saudi Arabia's relationship with not just the US, but other regional and international partners could also be compromised if Saudi Arabia acquired or built nuclear weapons. Through

---

<sup>211</sup> Al-Tamimi, "Will Riyadh Get the Bomb?" 55.

<sup>212</sup> Yoel Guzansky, "Questioning Riyadh's Nuclear Rationale," *Middle East Quarterly* 20, no. 2 (2013): 61, <http://uml.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=85845489&site=ehost-live>.

the Gulf Cooperation Council (GCC), Riyadh has developed a robust security network based on mutual goals and concerns. The GCC has worked together on a number of security issues over the last decade, such as the most recent Saudi-led activities in Yemen and the demonstrations in Bahrain and Oman that occurred during the aftermath of the Arab Spring.<sup>213</sup> Umar Karim hypothesized that this move to these larger, more ambitious, military endeavours could be a sign that Saudi Arabia is evolving and may make more assertive moves to secure its interests in the region.<sup>214</sup> While nuclear weapons could strengthen Saudi Arabia's threats against other powers, the economic and conventional military strength it gains through the GCC could be lost if Saudi Arabia unilaterally decided to obtain nuclear weapons.<sup>215</sup> If it did successfully become a nuclear power, it could negate the backlash by extending its nuclear umbrella to the GCC nations.

An additional security consideration is the possibility of Israel executing pre-emptive missile attacks against Saudi nuclear facilities to prevent the country from developing nuclear weapons. This was the case in 1981 when the Israel Defense Forces (IDF) bombed the Osirak nuclear facilities outside of Baghdad, Iraq.<sup>216</sup> Similarly in 2007 the IDF struck the nuclear facility near al-Kibar, Syria. However, Saudi Arabia could avoid the dilemma of pre-emptive strikes against its nuclear facilities by opting to purchase nuclear weapons and technology rather than build them indigenously. Once completed, Saudi Arabia would need to devise a plan to ensure its weapons were securely stored and located in such a way that guaranteed a credible deterrent and second-strike capability.

---

<sup>213</sup> Karim, "Evolution of Saudi Foreign Policy," 73. In 2011 Saudi Arabia took a stance against Arab Spring activism by spearheading a GCC military intervention in Bahrain to help stop the popular uprising against the ruling monarchy.

<sup>214</sup> Ibid., 73. The 2015 intervention in Yemen was the first GCC largescale military campaign.

<sup>215</sup> Debbie Abuelghanam and Naser Tahboub, "Mixed Messages: Iran versus Saudi Arabia and GCC," *Contemporary Review of the Middle East* 5, no. 4 (2018): 374, <https://doi.org/10.1177/2347798918795937>.

<sup>216</sup> Joshua Kirschenbaum, "Operation Opera: An Ambiguous Success," *Journal of Strategic Security* 3, no. 4 (2010): 49, <http://doi.org/10.5038/1944-0472.3.4.3>.

Like Egypt, Israel's reaction to Iranian nuclear proliferation could also affect the way that Saudi Arabia would respond and increase the urgency of nuclear weapons development. If both Iran were to develop nuclear weapons and if Israel were to end its nuclear opacity, it might increase the likelihood of sparking a domino effect in the Middle East. A second unfriendly nuclear power in the region would double the security challenges for Saudi Arabia. Even if Iran doesn't prove to be enough of a motivation for proliferation, it could still create an atmosphere of escalation where other neighboring countries take small steps such as developing civilian nuclear programs which could create a nuclear arms race. This would affect the balance of power in the Middle East and cause challenges to Saudi national security as the more nations that have nuclear capabilities, the more insecure Saudi Arabia would be without them.<sup>217</sup>

In summary, Saudi Arabia could anticipate security challenges if Iran proliferated but none of those obstacles would be enough to fundamentally challenge Saudi Arabia's security. Obtaining or building nuclear weapons would give it an increased ability to defend itself and fend off nuclear coercion, compel other nations if necessary, and advance its security agenda. Alternatively, it may employ the threat of nuclear proliferation as a bargaining chip to motivate other nations to offer better security assurances. Regardless, if Saudi Arabia attempted to develop nuclear capabilities, it could face the loss of security allies, the risk of pre-emptive strikes, and have a negative effect on its security standing in the region. Given these considerations, restraint may be the wiser course of action. It is possible that it could proliferate due to security concerns with Iran, but it is more likely that Iran is not perceived as an existential threat to the regime, and thus is an insufficient driver alone for proliferation.

---

<sup>217</sup> Al-Tamimi, "Will Riyadh Get the Bomb ?" 50.

### *Internal Considerations*

Two factors mark Saudi Arabia's domestic situation: its government type and related politics, and sectarian tensions related to the Shia population in the nation. Saudi Arabia is a nation that is ruled behind closed doors with little to no input from its citizens. As a result, the government, which is led by the king, can make the decision to develop nuclear weapons without any consultation. This makes Saudi Arabia relatively unique, as most nations even without having true democracies have a greater level of input from various officials and members within the government. The government controls all media and the public sector, and would likely also control the narrative about proliferation allowing a smooth transition domestically into becoming a nuclear power.

While an official policy has not been published, there have been numerous reports from within the Saudi government and high-ranking officials that indicate the prospect of proliferation. During an interview in 2018 with CBS, Crown Prince Mohammed Bin Salman stated that, "Saudi Arabia does not want to acquire any nuclear bomb, but without a doubt if Iran developed a nuclear bomb, we will follow suit as soon as possible."<sup>218</sup> Rumours about the Kingdom's nuclear intentions have gone back to 1994 when a Saudi diplomat Muhammad al-Khilewi, after seeking asylum in America made several statements during interviews that Saudi Arabia was attempting to acquire nuclear weapons.<sup>219</sup> Similar statements were also made by Prince Turki al-Faisal, and in a report by American diplomat Dennis Ross. The report claimed that the King had warned Washington by saying that "if they get nuclear weapons, we will get

---

<sup>218</sup> Mohammed Bin Salman, interview by Norah O'Donnell, "Saudi Arabia's Heir to the Throne Talks to 60 Minutes," *60 Minutes*, CBS, March 19, 2018, <https://www.cbsnews.com/news/saudi-crown-prince-talks-to-60-minutes>.

<sup>219</sup> Bahgat, *Proliferation of Nuclear Weapons in the Middle East*, 65.

nuclear weapons.”<sup>220</sup> It is conceivable that such statements are true and that Saudi Arabia intends to build nuclear weapons if Iran possesses them. It is also possible that Saudi Arabia may be using such claims to either dissuade Iran from proliferating, or to try to push countries such as the US to put more pressure on Iran. Internally this could also be a way to show strength, power, and increase domestic support.

Saudi Arabia is an absolute monarchy, where decisions are made with no public consultation on political matters. Additionally, this means there is little transparency about what decisions have been made regarding issues such as nuclear weapons. With the monarchy as the primary decision-maker, the second most influential decision-making apparatus in the Kingdom is the religious authority. The combination of political and religious unity in Saudi Arabia can be traced back to an alliance that occurred between the Al-Saud family and Muhammad Ibn Abd al-Wahab, who took his fundamentalist interpretation of Islam and through their agreement made it the state religion with the Quran, Hadith, and Sunnah as its laws.<sup>221</sup> As Saudi Arabia views religion at the core of its country, any sort of dissent or opposition is perceived as both religious and political apostasy and would have serious ramifications.

Iranian leadership has, in the past, spoke against the Al-Saud Family in efforts to both delegitimize its rule, and to cause unrest amongst Saudi’s Shia population. They have argued that the Al-Saud family is not a legitimate Islamic dynasty, and does not have the right to be considered the guardians of Mecca and Medina: the two most important locations in Islam.<sup>222</sup>

---

<sup>220</sup> Guzansky, “Questioning Riyadh’s Nuclear Rationale,” 59. Prince Turki al-Faisal is a Saudi royal prince and diplomat. He was the head of Saudi Arabia’s intelligence agency for more than two decades, and was formerly posted as the Saudi ambassador to both the UK and US.

<sup>221</sup> Stig Stenslie, “The End of Elite Unity and the Stability of Saudi Arabia,” *The Washington Quarterly* 41, no. 1 (2018): 65, <https://doi.org/10.1080/0163660X.2018.1445360>.

<sup>222</sup> Mabon, *Saudi Arabia and Iran*, 5.

The Iranian attempt is to destabilize Saudi Arabia by challenging its religious legitimacy, which is integrally intertwined with the government, and to provoke Shia discontentment.

Due to the wealth from the oil industry, Saudi Arabia is able to provide its population with a number of civil services. However, as Stig Stenslie notes “the welfare arrangements are presented as gifts rather than rights, and in return, subjects are expected to obey their ruler and benefactor.”<sup>223</sup> Saudi Arabia’s Basic Law, Articles 6 and 7 state:

In support of the Book of God and the Sunna of His Messenger (PBUH), citizens shall give the pledge of allegiance (bay'a) to the King, professing loyalty in times of hardship and ease. Government in the Kingdom of Saudi Arabia derives its authority from the Book of God and the Sunna of the Prophet (PBUH), which are the ultimate sources of reference for this Law and the other laws of the State.<sup>224</sup>

Political opposition is defined as heresy, and against the law. Through technology such as the internet and social media, the average Saudi citizen is exposed to alternative ways of governing, and it is possible that if civil services and privileges were to stop, the stability of the country could be threatened. In 2015 gas, water, and food subsidies decreased, followed in 2016 by a decrease in public sector benefits. In 2018, the country’s first value-added tax was introduced. Given these changes were not voted for, nor were they the result of any public consultations, they have been met with dissatisfaction, which, combined with other unfavourable conditions, might ultimately lead to civil disobedience.

Recently, Saudi Arabia has experienced a period of increased political insecurity due to the consolidation of power that has been granted to Mohammed Bin Salman making the monarchy especially sensitive to any sort of opposition that could lead to rebellion. In particular,

---

<sup>223</sup> Stenslie, “End of Elite Unity,” 66.

<sup>224</sup> The Embassy of the Kingdom of Saudi Arabia, *Basic Law of Governance, Chapter Two: The Law of Governance*, Articles 6-7, <https://www.saudiembassy.net/basic-law-governance>.

fear over political dissent from the minority Shia population in Saudi Arabia has been concerning to the government. It would have to ensure that proliferation was not perceived as a move against the Shia population in the Kingdom.

Mohammed Bin Salman being instilled as crown prince over one of King Salman Bin Abdelaziz's brothers was perceived as a move away from tradition, and has caused resentment and upset within the royal family. This has led some academics, including Stig Stenslie, to view Saudi Arabia under the leadership of the crown prince as the least stable it has been in its recent history, and susceptible to internal upheaval, or action from other members of the royal family to try to remove him from power.<sup>225</sup> While nuclear policy is not typically a divisive issue among the royal family in Saudi Arabia, as they are more concerned with their own wealth and family politics, it is possible that it could be used by other members of the royal family as justification to replace him.<sup>226</sup> Also, as Minister of Defence, Salman possesses a large concentration of power and has been criticized for his aggressive and impulsive decision-making such as the military intervention against the Houthis in Yemen. This change has academics such as Karim questioning "whether the departure of Saudi policy from a pragmatic to a more belligerent line is largely due to a change in Saudi royalty and its decision making model, or a change in the nature of the rising political and security challenges posed by Iran."<sup>227</sup>

The formation of the Islamic Republic of Iran in 1979 sparked growing resentment within Shia populations in Arab countries about their lack of representation and rights.<sup>228</sup> The marginalization of Shia in Saudi Arabia, which make up approximately 15% of the population,

---

<sup>225</sup> Stenslie, "End of Elite Unity," 71.

<sup>226</sup> Ibid., 71.

<sup>227</sup> Karim, "Evolution of Saudi Foreign Policy," 77.

<sup>228</sup> Jill Ricotta, "The Arab Shi'a Nexus: Understanding Iran's Influence in the Arab World," *The Washington Quarterly* 39, no. 2 (2016): 141, <https://doi.org/10.1080/0163660X.2016.1204414>.



has occurred in the form of the suppression of a number of uprisings and rights movements, the jailing and execution of Shia activists and clerics, the prevention of members from the Shia community that reside predominantly in the Eastern Province from being appointed to high status positions, and through lower rates of government funding being allocated to predominantly Shia neighborhoods.<sup>229</sup> Iran has often given backing to Shia sectarian groups within Arab nations, including Saudi Arabia, to support their resistance. Fears are that if Saudi Arabia decided to pursue proliferation as a counter to Iran's "Shia" nuclear weapons, it could be viewed as provocation by the Shia population in Saudi Arabia and aligned GCC nations.

After the Iranian Revolution, the Saudi government in an effort to reduce the appeal of a similar uprising emphasised that the Iranian Revolution was Shia in nature and that Shia Islam is incompatible with Wahhabi thought to try to make the idea of revolution seem less desirable to the Sunni population.<sup>230</sup> This narrative continued and Saudi Arabia expanded its statements about the un-Islamic nature of the Iranian government and hurled insults towards Iran such as drawing comparison between Ayatollah Khomeini and Adolf Hitler. In response, the Iranian government replied with equally inflammatory statements including Ayatollah Khomeini claiming that the Al-Saud family were infidels.<sup>231</sup>

The 2016 arrest and execution of the prominent Shia cleric Sheikh Nimr Al-Nimr reignited discussions both inside and outside of the Kingdom about the persecution of Shia populations in Saudi Arabia. Jill Ricotta suggested that although Al-Nimr was viewed as a bridge between the Shia in Saudi Arabia and the country of Iran, the Saudi response created an opposite

---

<sup>229</sup> Ibid., 146, 147. Saudi Arabia does not collect demographical information related to religious sects, but estimates are that from 10% up to 25% of the population adheres to Shia Islam.

<sup>230</sup> Mabon, *Saudi Arabia and Iran*, 176.

<sup>231</sup> Ibid, 176.

reaction and pushed them closer to Iran. Ricotta noted: “Increased persecution of the Saudi Shi’a comes with the explicit connection to Iran that may or may not exist. This assumption only encourages Shi’a to reach out to Iran for patronage as they are increasingly isolated from the state.”<sup>232</sup> Regardless, Al-Nimr’s death gained international attention and resulted in demonstrations in Saudi Arabia, Iran, and other locations globally. This execution was an intentional move on behalf of the government to show that any sort of anti-regime rhetoric would not be tolerated and that it would respond with an iron fist against both Shia dissidents in the country, and Iran as the supporter of rebellion in the region.<sup>233</sup>

Due to the perceived connection between Iran and Shia expansion, Shia groups within the Arab world, including within Saudi Arabia, have looked towards Iran for support. Some Shia in Saudi Arabia have shown their solidarity with Iran by displaying portraits of the Iranian supreme leader, or through their support of Hezbollah. which has angered the monarchy and created further fear of political dissent. Furthermore, the Saudis “see the current conflict in Yemen as an Iranian effort to convert the Houthis into a strong paramilitary force in Yemen that can challenge the Yemeni state and become a source of trouble for Saudi Arabia along the Saudi-Yemen border.”<sup>234</sup> In response, this has further unified the Shia populations in the region and created more feelings of oppression.

Overall, Saudi Arabia has the domestic conditions that would make it possible to pursue nuclear weapons with little internal pushback. Statements from the Kingdom that Iranian proliferation would be met with its own development of nuclear weapons indicate that nuclear development is a domestic interest and is seen in the eyes of the Saudi government as a possible

---

<sup>232</sup> Ricotta, “The Arab Shi’a Nexus,” 147.

<sup>233</sup> Karim, “Evolution of Saudi Foreign Policy,” 79.

<sup>234</sup> Ibid., 79.

scenario. Alternative explanations for the Kingdom's rhetoric include using it to demonstrate its displeasure with Iran, or to pressure countries to take more decisive action to prevent Iranian nuclear proliferation. The government's relations with its Shia population are integral to retaining national stability and it is unlikely Saudi Arabia would risk domestic upheaval at this time. These concepts are an indication that the domestic conditions in Saudi Arabia could be conducive to proliferation, but that it would need to be approached cautiously.

### ***External Considerations and Prestige***

As nuclear non-proliferation is the international political norm, Saudi proliferation could have deep impacts on its relations with other countries. This negative reaction from other nations would be amplified as Saudi Arabia is a member of the NPT. Conversely, Saudi Arabia wants to present itself as a leader in the Middle East and globally and could view nuclear proliferation as a path to eventually increasing its position and prestige. In the case of Iran developing nuclear weapons, their relationship may further affect these motivations and increase Saudi's desire to be perceived as a strong leader in the region.

Saudi Arabia has made contradictory public statements on nuclear proliferation. On one hand, it continues to assure other nations that it wishes to see the entire Middle East as a nuclear weapons free zone. On the other, officials have stated that it intends to possess nuclear weapons if Iran does. The ambiguity of Saudi Arabia's public position on this issue has created international uncertainty about its intentions. Regardless, it is clear Saudi Arabia is taking steps towards developing nuclear technology. In 2017 the Saudi Minister of Energy, Khalid al Falih, claimed that "We're going to harvest our resources, we're going to localize and we're going to

develop the technology just as we've done with oil and gas," and "whatever we do is going to be under strict compliance with international agreements."<sup>235</sup>

Countries that have ratified the NPT have used Article IV of the NPT to defend their right to pursue the ability to have self sustainable enrichment capabilities, while still minding international norms and agreements. It states, "Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty."<sup>236</sup> While it is permissible according to the NPT to develop enrichment capabilities for peaceful purposes and master the various stages of the nuclear fuel cycle, this knowledge is dual use and a nation could shift its technology from being for energy purposes to weaponization.

Since its creation in 1968, the NPT remains the main legal and political restraint against proliferation. Saudi Arabia has been a member of the NPT since 1988 but, like Egypt, has still to sign onto the AP.<sup>237</sup> Yet Saudi Arabia decided to sign the Small Quantities Protocol (SQP) in December 2005.<sup>238</sup> Instead of being a comfort to the international community, signing the SQP has been seen as a way for Saudi Arabia potentially to develop nuclear weapons without

---

<sup>235</sup> Khalid Al-Falih, interview by Rania El Gamal and Katie Paul, "Saudi Energy Minister Q&A with Reuters," Reuters, December 20, 2017, <https://www.reuters.com/article/us-oil-saudi-minister-text/saudi-energy-minister-qa-with-reuters-idUSKBN1EE2RX>.

<sup>236</sup> The United Nations, "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," Article IV.

<sup>237</sup> Miller and Volpe, "Abstinence or Tolerance," 38; and International Atomic Energy Agency, "Safeguards Legal Framework: Additional Protocol."

<sup>238</sup> International Atomic Energy Agency, "Status of Small Quantities Protocols," accessed February 11, 2019, <https://www.iaea.org/topics/safeguards-legal-framework/status-small-quantities-protocols>; and International Atomic Energy Agency, "More on Safeguards Agreements," accessed March 4, 2020, <https://www.iaea.org/topics/safeguards-legal-framework/more-on-safeguards-agreements>. The SQP is a protocol that can be used in junction with the Comprehensive Safeguards Agreement, which is required for all non-nuclear weapon states party to the NPT. This protocol offers non-nuclear states that have minimal or no nuclear material to bypass some of the aspects of the Safeguards Agreement.

detection from the international community, as the SQP allows states that are not suspected to be at risk of proliferating to forgo some of the more intensive inspection parameters in return for a declaration of its nuclear activities.<sup>239</sup> The US in particular was quite critical of Saudi Arabia's decision to sign onto the SQP and not the AP.

Given the incredibly destructive potential of nuclear weapons, there is international consensus that further proliferation is something to be avoided. If Saudi Arabia were to attempt or successfully build nuclear weapons, it would certainly face backlash from the international community. Negative ramifications of pulling out of the NPT could include changed diplomatic relationships and lead to economic sanctions. With the current non-proliferation regime, it is important to the international community that Saudi Arabia does not develop similar capabilities in the case of Iranian proliferation, especially given the fear of further nuclear cascading in the region.

If Saudi Arabia decided to proliferate, it may confront reduced trade and encounter economic sanctions. Iran has faced sanctions over the past few decades especially after the exposure of its hidden nuclear facilities and has experienced a period of greatly reduced international investment and trade with other nations. The sanctions in the early 2010s caused Iran's economy to shrink considerably with estimates suggesting up to a 20% reduction.<sup>240</sup> While economic sanctions have significantly hurt the economy in Iran, it has been able to take steps to diversify its economy "as decades of successive waves of sanctions have forced Iran to rely less on direct energy exports, keep a low debt-to-GDP ratio, and maintain high levels of foreign-

---

<sup>239</sup> Bahgat, "Nuclear Proliferation," 423.

<sup>240</sup> Thomas Juneau and Sam Razavi, "Costly Gains: A Cost-benefit Assessment of Iran's Nuclear Program," *The Nonproliferation Review* 25, no. 1-2 (2018): 77, <https://doi.org/10.1080/10736700.2018.1477456>.

exchange reserves.”<sup>241</sup> Iran now relies less on exports and has created more local manufacturing and service jobs. Regardless, the sanctions have caused deep economic hardship for Iran and have negatively impacted the nation greatly.

Similar to the international reaction toward Iran’s attempts at proliferation, there would be international backlash against Saudi Arabia if it took a similar path. This could affect its relationships with other nations including the US and GCC countries. Economic sanctions could affect its ability to provide itself with the level of protection that it has been used to. Volpe and Miller state: “Due to its rudimentary indigenous capabilities, Saudi Arabia will be highly dependent on imports of nuclear technology and materials rendering its energy program extremely vulnerable to sanctions should it begin pursuing nuclear weapons or engaging in other suspicious nuclear activities.”<sup>242</sup> Conversely, as Saudi Arabia possesses the world’s largest oil reserve, a resource that is depended upon globally, it could be speculated that it would not face the same level of sanctions and backlash that Iran faced.

As discussed in the second chapter, the reactions toward Iran and North Korea’s attempts to proliferate contrasted with those from India and Pakistan’s. If Saudi Arabia’s proliferation is treated in a similar way to that of the latter two, it may not be that detrimental to its international status. When India and Pakistan tested their nuclear capabilities in 1998, they did not face the large international backlash one might have expected.<sup>243</sup> Although not members of the NPT, it appears that the international community almost accepted the two nations as nuclear weapons states and tolerated the situation as they balance each other out and aren’t viewed as a credible

---

<sup>241</sup> Ibid., 74.

<sup>242</sup> Nicholas Miller and Tristan Volpe, “Abstinence or Tolerance: Managing Nuclear Ambitions in Saudi Arabia,” *The Washington Quarterly* 41, no. 2 (2018): 32, <https://doi.org/10.1080/0163660X.2018.1484224>.

<sup>243</sup> See pages 29-30 for further analysis of international reactions towards India and Pakistan proliferating.

threat to the West.<sup>244</sup> In 2005 a nuclear deal between India and the US cemented this differentiation.

It is possible that despite being a member of the NPT, Saudi Arabia would confront a reaction more like the one India and Pakistan faced, than the reaction faced by Iran and North Korea, especially if the international community saw Saudi Arabia's proliferation as a response to Iran's acquisition of nuclear weapons. As Saudi Arabia houses some of the world's largest oil and gas reserves and due to its friendly relations with other nuclear powers, it might not face extreme international condemnation. Moreover, Saudi Arabia is strategically important to the US. Saudi Arabia has been relatively resistant to domestic upheaval and is a key player in geopolitical stability in the region. Saudi Arabia, along with other moderate Middle Eastern powers, form an opposition against certain forms of extremism such as in the 2010s against the threat of ISIS, and against the current threat of Iran. This strategic importance reinforces the prediction that Saudi Arabia may receive a more limited response if it decided to proliferate.

Despite the potential for negative international consequences, Saudi Arabia's proliferation could increase its international standing. While Saudi Arabia would most likely face an immediate backlash, it is possible that once things settled, Saudi Arabia would emerge with more international status and prestige. Some scholars have speculated that Iran's motivations are not principally for security: "Iran has had a goal for its nuclear program which was to enhance its international political status by increasing its regional influence."<sup>245</sup> Likewise, Saudi Arabia may also view proliferation as a method to increase its standing in the region and on the world stage. While the international community opposes the development of more nuclear weapon states,

---

<sup>244</sup> Mario Carranza, "Can the NPT Survive? The Theory and Practice of US Nuclear Non-Proliferation Policy after September 11," *Contemporary Security Policy* 27, no. 3 (2006): 499, <https://doi.org/10.1080/13523260601060537>.

<sup>245</sup> Abuelghanam and Tahboub, "Mixed Messages," 375.

nuclear weapons states have traditionally held the most international power and influence. If Saudi Arabia seeks to extend its leadership, it may decide it is worthwhile to sacrifice its position for the time being for the potential of increasing its standing over the long term by becoming a nuclear state.

Iranian proliferation could also give Saudi Arabia a feeling of inferiority due to their history of rivalry. This would be challenging to the Kingdom considering the power dynamics between the two countries. As Karim wrote: “There is also an understanding in Saudi power circles that the implications of this increase in Iranian power will be catastrophic for the interest of Saudi Arabia in the region.”<sup>246</sup> In order to protect its security, interests, and influence in the region, Saudi Arabia may try to copy Iran. During an interview, Salman was asked: “At its heart, what is this rift about? Is it a battle for Islam?” He responded: “Iran is not a rival to Saudi Arabia. Its army is not among the top five armies in the Muslim world. The Saudi economy is larger than the Iranian economy. Iran is far from being equal to Saudi Arabia.” As Saudi Arabia already sees itself having superiority over Iran, Iran developing nuclear capabilities could be a significant motivation for the Kingdom to seek nuclear weapons to rebalance their power dynamic.

The nuclearization of Iran would make Saudi Arabia’s nuclear ambition more likely due to its rivalry with Iran and desire to be viewed as a regional leader. Pride is an issue that is very important to the Kingdom, so it would not want to be perceived as weak in the international community. Conversely, Saudi Arabia has a history of adhering to nuclear non-proliferation norms and has increasingly become more involved with global politics. Saudi Arabia may forgo

---

<sup>246</sup> Karim, “Evolution of Saudi Foreign Policy,” 83.



nuclear weapon capabilities out of fear of becoming a pariah state and losing its international status and support. Whether the pull for the appearance of superiority would be enough of a motivation for Saudi Arabia to be willing to risk its reputation is unknown, but it appears more likely external dynamics point towards nuclear restraint rather than proliferation.

### ***Economic and Technological Feasibility***

A natural condition for a country to proliferate is having the economic and technological capabilities to do so. It is a difficult and expensive process to develop indigenous nuclear capabilities which has created a natural barrier for many countries. As civilian and nuclear weapons programs use the same fundamental technology and infrastructure, there is no guarantee a civilian nuclear program will not translate into a nuclear weapons program. Thus, there is concern that Saudi Arabia might take advantage of nuclear technology's dual use nature and either build up a civil nuclear program that could later be quickly converted into a nuclear program with military purposes if a need arose, or, simply keep on developing its nuclear technology until it produced weapons. Others have suggested that because of Saudi Arabia's wealth, it is plausible that it could bypass the technological hurdles by purchasing either nuclear weapons in their entirety, or components of nuclear technology to easily develop its own capabilities. Due to Saudi Arabia's lack of considerable financial hurdles, bypassing the technological barrier may be feasible.

It is difficult to assess the true economic cost of nuclear proliferation. The most recent nuclear state, North Korea, has attempted to keep the specifics of its program as clandestine as possible. Even the costs of developing a nuclear energy program are difficult to calculate due to the many variables. In 2014 a study on potential economic costs of a Saudi civilian nuclear

program concluded that the costs related to developing a program would be much greater than the economic benefits associated with having it as an alternative energy source.<sup>247</sup> This indicates that although there would be returns for developing a nuclear energy program, the overall cost of a program would outweigh its financial gains. Regardless, in an effort to diversify its energy sources, rely less on oil for domestic consumption, increase economic gain through the exportation of petroleum, and meet its Vision 2030 goals, Saudi Arabia set the target of creating 17.6 GW of nuclear power, 41 GW of solar power, and 9 GW of wind power by 2032.<sup>248</sup> This could merely be part of its diversification plan, or, it could hint that there are alternative motives and that Saudi Arabia is taking a step towards nuclear weapons development.

Saudi Arabia is already spending a large amount of its GDP on its military. The International Institute for Strategic Studies estimates that the Kingdom spent “12.51 percent of its GDP in 2015, 12.61 percent in 2016, and 11.30 percent in 2017”<sup>249</sup> on its military. They also estimated that in 2017 Saudi Arabia’s military spending was \$76.7 billion, which was higher than the defence spending of Russia, France, Germany, Britain, or Italy. While still a wealthy state, Saudi Arabia’s GDP growth has been slowing and in 2017 experienced a budget deficit of 8.3% of its GDP, which the Kingdom compensated for by reducing subsidies and adding a value-added tax of 5%.<sup>250</sup> Due to its lack of foundational nuclear technology and infrastructure, taking

---

<sup>247</sup> Ali Ahmad and M.V. Ramana, “Too Costly to Matter: Economics of Nuclear Power for Saudi Arabia,” *Energy* 69 (2014): 692, <https://doi.org/10.1016/j.energy.2014.03.064>. Muhammad Khurram Khan, and Muhammad Babar Khan, *Research, Innovation and Entrepreneurship in Saudi Arabia : Vision 2030* (Milton: Taylor & Francis Group, 2020), i. Vision 2030 is an “ambitious economic plan by the KSA to reinvent and diversify its economy from a heavy dependence on hydrocarbon to knowledge-based resources.”

<sup>248</sup> King Abdullah City for Atomic and Renewable Energy, “Future Energy: The Vision,” KACARE, accessed February 28, 2018, <https://www.kacare.gov.sa/en/FutureEnergy/Pages/vision.aspx>.

<sup>249</sup> Anthony Cordesman, “Military Spending: The Other Side of Saudi Security,” Center for Strategic and International Studies, (2018): 77, <https://www.csis.org/analysis/military-spending-other-side-saudi-security>.

<sup>250</sup> Central Intelligence Agency, “Saudi Arabia,” *The World Factbook*, (Washington, DC: Central Intelligence Agency, 2016), <https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html>.

on a project as big as developing domestic nuclear capabilities would be a burden on its economy.

Nuclear technology has been of interest to the Kingdom for years, with the first major step taken in 1978 in which an agreement between Saudi Arabia, Kuwait, and Qatar was signed with the intention of building a joint power station by 1986.<sup>251</sup> Yoel Guzansky hypothesised: “Although difficult to determine clearly, the motivation behind these initial pursuits of nuclear technology could have included Israel’s and Iraq’s nuclear endeavours, the desire for increased cooperation in the gulf, and high oil prices.”<sup>252</sup> Since then, Saudi Arabia has made little progress towards developing functioning nuclear power capabilities. It has not yet built a nuclear reactor nor even the rudimentary foundations of a nuclear program. The lack of progress could be similarly attested to the rise in oil prices, the Iran-Iraq war, the pre-emptive attack on the Iraqi nuclear facility, and changing perspectives and safety concerns about nuclear energy due to events such as the Three Mile Island accident near Harrisburg Pennsylvania.

In 2010 Saudi Arabia established the King Abdullah City for Atomic and Renewable Energy (KACARE), as the body responsible for all national nuclear research and policy. In 2011, the Saudi minister of commerce and industry announced that roughly \$100 billion would be spent building a total of sixteen nuclear power plants in an effort to meet the vision 2030 plans of energy diversification and to meet Saudi Arabia’s rising energy needs.<sup>253</sup> This goal was eventually lowered in 2017 to the much more realistic short term goal of developing Saudi Arabia’s first two nuclear reactors under its newly launched Saudi National Atomic Energy

---

<sup>251</sup> Yoel Guzansky, “Civilian Nuclear Development in the Arabian Peninsula: Prestige, Energy, and Iran Civilian Nuclear Development in the Arabian Peninsula,” *Journal of Arabian Studies* 5, no. 1 (2015): 68, <https://doi.org/10.1080/21534764.2015.1050879>.

<sup>252</sup> Ibid., 68.

<sup>253</sup> Al-Tamimi, “Will Riyadh Get the Bomb?” 53.

Program.<sup>254</sup> Work on the first power reactor was publicized by Saudi state media on November 6<sup>th</sup> 2018 after Salman's inauguration and laid the foundation for the first nuclear research reactor.<sup>255</sup>

While under the NPT non-nuclear weapon states are allowed to develop enrichment capabilities for civil use, states developing enrichment capabilities are often viewed with apprehension by the international community. This is because if states acquire the ability to enrich uranium, they may later surpass the level of enrichment needed for energy and civil purposes and could create highly enriched uranium for weaponization. This has been the fear in the case of Iran, especially after 2002 when the world discovered Iran had mastered the nuclear fuel cycle and the existence of a uranium enrichment facility and a heavy water production plant were exposed.<sup>256</sup> With Saudi Arabia, there is concern that learning how to master the fuel cycle would mean it would have the capability to develop nuclear weapons in a short period of time if it desired and that this ability would increase the likelihood of a nuclear arms race in the Middle East.

Since the 2015 JCPOA, Saudi Arabia has made small strides towards creating a civil nuclear program. Once completed, its civil nuclear program would increase the feasibility of weaponization in the future. One of the main criticisms of the JCPOA is that the enrichment limitations agreed upon are only for a period of 15 years, which means that after this period Iran

---

<sup>254</sup> Middle East Economic Survey, "Saudi Approves Scaled-Back Nuclear Plans, Studies Reactors Large and Small," MEES 60, no. 30 (2017), accessed February 21, 2019, <https://www.mees.com/2017/7/28/power-water/saudi-approves-scaled-back-nuclear-plans-studies-reactors-large-and-small/124f40b0-739d-11e7-b966-b5da8a91fcd8>.

<sup>255</sup> Saudi Press Agency, "HRH Crown Prince Inaugurates and Lays Foundation Stones for Seven Strategic Projects, Including Saudi Arabia's First Nuclear Research Reactor, & Aircraft Fuselage Factory," SPA, November 6, 2018, accessed February 28, 2019, <https://www.spa.gov.sa/viewstory.php?lang=en&newsid=1838032>.

<sup>256</sup> Rupal Mehta and Rachel Whitlark, "Unpacking the Iranian Nuclear Deal: Nuclear Latency and U.S. Foreign Policy," *The Washington Quarterly* 39, no. 4 (2016): 55, <https://doi.org/10.1080/0163660X.2016.1261567>.

could potentially stockpile uranium. The perception that Iran's steps towards proliferation are being delayed, rather than terminated, has allowed Saudi Arabia to have a window of time to better prepare itself for the end of the enrichment limitation period. While the future of the JCPOA is unknown after the US withdrawal in 2018, Saudi Arabia has continued to focus on its vision 2030 goals.

Progress towards its nuclear energy goals has been gradual as Saudi Arabia has just begun work on its first nuclear reactor. Volpe and Miller point out that the development of first-generation gas centrifuges have historically been developed in an average of 24 months and if "Saudi Arabia has a proficient well-managed nuclear program in place, mastery of simple gas centrifuge technology could be within its reach."<sup>257</sup> Saudi Arabia has been discussing with South Korea, France, China, and Kazakhstan about nuclear energy partnerships. Additionally, meetings between the US Energy Secretary and Saudi leadership occurred in 2017 through to 2018 to discuss a nuclear cooperation agreement, which would be required for America's involvement in the transfer of nuclear equipment or material. If this is indeed the full extent of its current domestic capabilities, it is very far from developing the nuclear infrastructure to produce nuclear weapons. During an interview, Prince Turki al-Faisal identified educating and training Saudi natives as the most important factors in being able to develop indigenous nuclear power.

We're sending out scholarship students to study in top universities that can provide know-how and skills on this issue. And we've signed with a European or international group on security for energy for nuclear plants.... We have no illusions about our capabilities. We know we have few capabilities in terms of human resources, so that's why we began a very extensive training and skills acquisition program.<sup>258</sup>

---

<sup>257</sup> Miller and Volpe, "Abstinence or Tolerance," 37.

<sup>258</sup> Dan Drollette, "View from the Inside: Prince Turki al-Faisal on Saudi Arabia, Nuclear Energy and Weapons, and Middle East Politics," *Bulletin of the Atomic Scientists*, 72, no. 1 (2016): 19, <https://doi.org/10.1080/00963402.2016.1124655>.

Since the Kingdom has made its intention to build up a nuclear energy program public, it has already begun to face international scrutiny and concern about its proposed plans. According to Volpe and Miller, the US should be particularly interested in providing Saudi Arabia with the materials as to have better access and influence over the Saudi program. So far, Riyadh has been seeking cooperation from other nations and has yet to come to an agreement with Washington. In order for the US to become involved with nuclear development and export any significant nuclear energy items including nuclear power reactors, research reactors, the major components of reactors, or nuclear fuel to Saudi Arabia, a 123 Agreement is required.<sup>259</sup> Additionally, for an agreement to be formalized, Saudi Arabia must agree to adhere to American nuclear non-proliferation norms.<sup>260</sup> It is possible that if Saudi Arabia were to continue its negotiations with the US, they would reach a deal that would both supply Saudi with the resources needed to initiate its civil nuclear program, while reducing the probability that it would develop latent nuclear power.

Volpe and Miller suggest that “at this early stage of nuclear development in the Kingdom, it is conceivable that Washington may be able to put lucrative enough rewards on the table to induce Riyadh into forfeiting enrichment.”<sup>261</sup> On the other hand, Saudi Arabia has many nations bidding for the chance to partner with its civil nuclear program and a proposed agreement that is too constrictive would be enough of a deterrent for it to look towards other nuclear powers for assistance developing its programs. Even with a 123 Agreement, Saudi

---

<sup>259</sup> Named after Section 123 of the U.S. Atomic Energy Act of 1954, 123 Agreements are legal frameworks that allow the US to control how a country receiving nuclear exports will use its materials in an attempt to prevent the technology from being used for weaponization.

<sup>260</sup> Miller and Volpe, “Abstinence or Tolerance,” 31.

<sup>261</sup> Ibid., 35.

Arabia could still possibly develop its own clandestine enrichment program without Western observation.

The Kingdom currently possesses Chinese made DF-3 IRBMs with a range of 3000km which brings both Israel and Iran within range. The DF-3 have been claimed to be modified to be incapable of pairing with nuclear warheads. Regardless, Saudi Arabia may be easily able to reverse engineer Chinese IRBMs with a nuclear capability. It has been speculated since January 2019, that Saudi Arabia has also been building a ballistic missile facility outside its capital.<sup>262</sup> The ability for Saudi Arabia to produce its own ballistic missiles could be another indicator that it is interested in obtaining nuclear weapons and that it would have the ability to pair a warhead to a delivery system.

Due to the lack of basic nuclear energy capabilities and limited nuclear research knowledge, some speculate that Saudi Arabia would be more likely to simply buy completed nuclear warheads from a nation that already has nuclear weapons. Yoel Guzansky in 2013 argued: “It [Saudi Arabia] has nowhere near the level of indigenous technical capacity needed to produce, maintain or deploy nuclear weapons...nor does Riyadh possess the necessary institutional support (across regulatory, technical, and legal fields) to effectively retain nuclear deployments.”<sup>263</sup> Buying a completed weapon would allow Saudi Arabia to bypass the technological hurdles associated with producing its own weapons. China and Pakistan are both commonly suspected to be the two countries Saudi Arabia could reach out to if it decided to take this route to proliferation.

---

<sup>262</sup> Kelsey Davenport, “Saudi Arabia Seen to Build Missile Factory,” *Arms Control Today*, March 4, 2019, assessed April 11, 2019, <https://www.armscontrol.org/act/2019-03/news-briefs/saudi-arabia-seen-build-missile-factory>Page.

<sup>263</sup> Guzansky, “Questioning Riyadh’s Nuclear Rationale,” 60.

The relationship between China and Saudi Arabia has never been particularly close especially given the Kingdom's historically close ties with the US. Regardless, China has a history of supplying Saudi Arabia with weapons, including a secret deal made in the 1980s when China sold Saudi Arabia thirty-six IRBMs.<sup>264</sup> If China were to provide Saudi Arabia with nuclear weapons, it would jeopardize its security situation by challenging its security relations with other countries. While China often decides to go against international norms, it could risk damaging diplomatic ties and the imposition of trade sanctions by assisting Saudi Arabia with nuclear weaponization.<sup>265</sup> On the other hand, if Riyadh were to have a falling out with Washington, it is predicted that Beijing would seek to deepen their security relationship.

The country most speculated to be willing to sell nuclear weapons or technology to Saudi Arabia is Pakistan. The relationship between Islamabad and Riyadh is one of mutual benefit. Both Sunni, and geographically on either side of Iran, they have similar concerns about Iranian proliferation and the fear that it will lead to instability in the region. Suspicions about the two countries collaborating are not without cause. Such events indicating a possible deeper nuclear relationship include a visit by high ranking Saudis to a Pakistani missile production plant, Abdul Qadeer Khan and other Pakistani scientists' visits to Riyadh, and a tightening security relationship. This relationship was put to the test in 2011 when Saudi Arabia requested assistance from Islamabad over fear that the Shia uprising in Bahrain would spill over into its territory. Islamabad agreed, and Pakistani soldiers were put on alert were they to be needed.<sup>266</sup> Saudi Arabia has also agreed to finance arms deals in exchange for Pakistan training its air force and navy personnel. Some have suggested that the Kingdom and Pakistan may already have an

---

<sup>264</sup> Ibid., 60.

<sup>265</sup> Al-Tamimi, "Will Riyadh Get the Bomb?" 55.

<sup>266</sup> Guzansky, "Questioning Riyadh's Nuclear Rationale," 61.



agreement between the two nations in which Pakistan has offered private assurances or support for a Saudi nuclear program.

Some scholars such as Naser al-Tamimi have suggested that in exchange for economic gains, Pakistan might be willing to station its own nuclear weapons within Saudi Arabia or have missiles with warheads based nearby that are under its control. The benefits of this would be that Saudi Arabia could argue that it is not violating the terms of the NPT agreement, and may face less domestic backlash than it would if it made agreement with a Western country as Pakistan and Saudi Arabia are both Sunni majority countries. On the other hand, Pakistan may not want to damage its relationship with the US and its international status by appearing to aid the spread of nuclear proliferation.<sup>267</sup> As both Pakistan and Saudi Arabia are Sunni majority nations, that move could be seen by Iran as the two nations joining forces against its position in the region. More concerning could be Israel's reaction to such an agreement, as it most likely would not look favourably upon the alliance and perhaps even try to attempt a pre-emptive strike if it found out about the deal before it was operational.

Prince Turki al-Faisal has responded to the accusations that Saudi Arabia might purchase nuclear weapons in 2016 saying that:

There isn't going to be any buying of Pakistani or whatever source of weapons in that field. No country will sell, first of all. Secondly, you can't simply buy it off the shelf... you need a whole complex infrastructure to service nuclear weapons. So it's not just simply buying from Pakistan. And that's never been considered an option to the Kingdom, despite what American and European reporters have said or written.<sup>268</sup>

---

<sup>267</sup> Al-Tamimi, "Will Riyadh Get the Bomb?" 54.

<sup>268</sup> Drollette, "View from the Inside," 21.

There is little weight to these denials as the idea of buying nuclear weapons from another state would depend on complete secrecy until the transaction is complete. It is useful though in highlighting the challenges both countries may face.

While Saudi Arabia does not currently have the basic infrastructure necessary to develop a nuclear weapons program, it does have the economic ability to make it happen. There have been subtle shifts in its education system and scholarship programs that have suggested that it is putting more focus on developing a future work force that would have the capacity to expand into this sector. The Kingdom's wealth and economic situation is unlike other states that have attempted to proliferate but failed due to constraints and it is possible that Saudi could use its economic situation to overcome technological barriers.

### ***Conclusion***

In the case of Iranian proliferation, Saudi Arabia will need to weigh the benefits and drawbacks of possessing nuclear weapons and decide if proliferating would be its best course of action. Iran poses a security dilemma to Saudi Arabia, but it is unlikely the scenario would create an existential security threat. The likelihood of Iran directly threatening Saudi Arabia with nuclear weapons is low. Instead, it is more likely that the Iranian security threat will continue to manifest similarly to how it currently does through proxy conflicts and struggles for regional control. As it is not an existential security threat, Saudi Arabia may decide to maintain the status quo and its current security assurances while slowly continuing on its path to nuclear energy capabilities. Saudi Arabia has made public statements that if Iran proliferated it would follow suit. If it decides to, the internal situation in Saudi Arabia is conducive for the King to make the

decision to develop nuclear weapons without public consultation. The decision may result in sectarian unrest, but the Kingdom's leadership has a strong enough hold on the nation that it would most likely be a mere obstacle and not be an influential factor in the decision to proliferate.

The reaction from the international community remains a major consideration. Saudi Arabia will certainly face some sort of backlash if it decided to follow Iran's path. Contrarily, due to its oil trade and relationship with the US, it is speculated that the reaction may not be as severe as it has been with other nations. Saudi Arabia has prided itself as a leader in the Middle East. The embarrassment of Shia Iran proliferating may be enough for Saudi Arabia to desire the same capability. These external considerations viewed together do not indicate enough of a motivation for proliferation. Feasibly, it appears that Saudi Arabia's economic situation would make it possible to acquire nuclear weapons either through purchase or eventual indigenous capabilities even though it currently does not have the technological base.

Using the outline of the four motivations for proliferation, two factors emerge that may facilitate nuclear proliferation, and two emerge that may pose a challenge to Saudi Arabia's desire to proliferate. Overall, Saudi Arabia's economic and internal political situation would allow for Saudi Arabia to proliferate, if it so desired, but that it is unlikely at present due to the lack of a pressing security threat and the potential international pressure. Whether Iranian proliferation would motivate Saudi Arabia to also attempt to possess nuclear weapons will continue to be speculation, but it appears Iranian proliferation in itself is not significant enough motivation.

## **Chapter V**

### **Conclusion**

Exploring the theory of cascading nuclear proliferation gives insight into how countries might react to an animus state developing nuclear capabilities. In particular, investigating the potential effects of Iranian nuclear proliferation on nearby countries tests the utility of this theory in the context of the Middle East. Using the four motivations of nuclear proliferation outlined in the second chapter – security concerns; internal considerations; external considerations and prestige; and feasibility – helps predict the likelihood of proliferation. In the case of Iran developing nuclear weapons, Egypt and Saudi Arabia were both identified as the most likely regional countries to proliferate as a result of Iran. Both nations presented indicators that proliferation as well as restraint may occur. Using the four motivations of proliferation as a framework for analysis it however is evident the likely drivers of proliferation in both countries are not all present.

All four of the motivations existing simultaneously is a strong indicator of the likelihood of nuclear proliferation. For a country with security and domestic motivations to proliferate, few internal and external barriers, and the ability to do so, the path to proliferation can range from possible to probable. Even one of the indicators not being present could be a significant hindrance and decrease the ability and probability of proliferation. On the other hand, if there were a significant enough challenge or threat to the nation's existence, way of life or government, it is possible that not all motivations would need to be in place.

Drivers that indicate nuclear development could occur in Egypt are its contentious history with Iran, its desire to not appear as inferior regionally, and its conducive internal political

dynamics. In contrast, it is evident that despite Egypt's security concerns, it does not perceive Iran as an existential security threat. Egypt's recent period of domestic instability and history of adhering to international non-proliferation norms also point towards restraint. Furthermore, it has neither the economic nor technological foundations necessary to build a nuclear program. These factors combined suggest that Iran proliferating would be an insufficient driver in itself and that unless all four of the motivations are present, it would be unlikely that Egypt would emulate Iran.

Saudi Arabia similarly presents factors that suggest both nuclear plausibility and restraint. Saudi Arabia, being a monarchy, has the domestic conditions that would facilitate a swift transition to becoming a nuclear power, as well as the economic means to complete this task. More significant is Saudi Arabia's rivalry with Iran both as a security concern and through religious, cultural, and leadership competition. However, as there are other factors that suggest restraint these factors combined are not enough to indicate nuclear proliferation is highly likely. While Iran is a security concern to Saudi Arabia, unless variables changed such as Iran making direct security threats, it does not present enough of a risk to Saudi Arabia to warrant developing nuclear weapons. Additionally, Saudi Arabia's economy depends on the exportation of oil and given the current surplus of oil on the market, positive trade relations are of utmost importance. Therefore, it would be unlikely that it would proliferate and jeopardize its diplomatic and economic relations with other countries. Above all, Saudi Arabia does not have basic nuclear infrastructure so if it decided to become a nuclear state it would either need to purchase completed weapons or build them from the foundational stage. Balanced against each other, the benefits of Saudi proliferating appear to be less than the benefits of abstaining and it is also unlikely that Saudi Arabia would proliferate as the result of Iran developing nuclear weapons.

These two case studies indicate that although Iranian proliferation poses a threat to nations in the region, it doesn't appear in the current climate to be enough of a driver to spark proliferation in another country. This challenges the assumption that nuclear proliferation comes in a cascade and that one nation proliferating will in itself cause others to emulate. While in some cases an adversary possessing nuclear abilities is enough of a motivator, it appears that either all four motivations of proliferation need to be aligned to consider developing nuclear weapons advantageous, or there needs to be an existential threat to justify the negative ramifications.

There have been a few historic examples in which nuclear weapons development has spilled over and resulted in other countries developing similar capabilities. As introduced in the opening chapter, China, India, and Pakistan proliferating is a clear instance of a chain reaction of proliferation.<sup>269</sup> It is worthwhile and relevant to explore why this case resulted in instigating further proliferation, while other cases have not. Comparing this positive occurrence to the theoretical scenario in which Iran proliferated can grant insight into how the situations differ and what significance they would play in the speculated outcome.

China, India, and Pakistan each had a combination of factors or a pivotal factor that justified nuclear weapons development. In the case of China, "China developed the bomb because Beijing was threatened with possible nuclear attack by the United States at the end of the Korean War and again during the Taiwan Straits crises in the mid-1950s."<sup>270</sup> China's relationship with the Soviet Union became progressively less amicable making it not only question Moscow as a nuclear ally, but also further increased its needs for non-conventional weapons. China's internal factors were aligned, and the same nuclear non-proliferation norms had not yet been

---

<sup>269</sup> Refer to pages 3-4 for more details regarding China, India, and Pakistan proliferating.

<sup>270</sup> Sagan, "Why do States Build Nuclear Weapons," 58-59.

established giving it a clear path to nuclear proliferation. China's aspiration to become a regional and global power was the final motivating factor that pushed it to proliferate. It was willing to face the hurdles for the sake of increasing its global standing through becoming the fifth nation to possess nuclear weapons.

India's weapons development differs as it did not occur immediately after, and instead, waited ten years after China's test until various factors aligned to test its first device. This timing occurred as domestic consensus had switched to desire nuclear proliferation, and India had the same, if not more, security threats than it did ten years earlier. These ten years also gave India the chance to build up its nuclear program and allowed for the feasibility of nuclear weapons development. India was faced with Nuclear China on one border, and its rival Pakistan on the other. Desiring deterrence against its enemies and increased status to reflect the prestige India felt was rightfully theirs, India decided to proliferate. It was noted that while there was gradual buildup, that, nonetheless, the final decision to test a nuclear weapon may have been a quick decision with military officials not being informed until right before the event.<sup>271</sup> It was suggested that due to this hasty decision the international ramifications were not fully explored, "New Delhi's lack of preparedness for Canada's immediate termination of nuclear assistance, suggest that the decision was taken quickly, even in haste, and thus may have focused more on immediate political concerns rather than on longer-term security or energy interests."<sup>272</sup> However, the four motivations for proliferation had all been present which resulted in India developing nuclear weapons without the motivation of an immediate major security threat.

---

<sup>271</sup> Torrey Froscher, "Anticipating Nuclear Proliferation: Insights from the Past," *The Nonproliferation Review* 13, no. 3, (2006): 470, <https://doi.org/10.1080/10736700601071439>. Estimates are that the program was so secretive that as few as 75 scientist and engineers directly participated in building and detonating the first nuclear device.

<sup>272</sup> Sagan, "Why do States Build Nuclear Weapons," 67.

In the case of Pakistan, it viewed India's nuclear weapons as an existential threat and was the decisive factor that made nuclear weapons a pressing need. This overshadowed the other factors and allowed Pakistan to overcome its external concerns and economic hurdles. After India's nuclear test, Pakistan was facing not one, but two Asian nuclear powers which made the reality of nuclear weapons an urgent concern.

China, India, and Pakistan's paths to nuclear proliferation were, at least in part, caused by a neighbouring or animus state proliferating. While their proliferation could also be influenced by a variety of factors that go beyond the scope of this investigation, collectively they form an example of an identifiable chain reaction of proliferation. It is possible that there could be a similar pattern of proliferation in the future, but it is unlikely to happen as a result of Iranian proliferation in the current conditions.

Unlike China, which aspired to be a global power, neither Egypt, Saudi Arabia nor Iran perceive their country to be a superpower. Instead they view their position as a regional power and wish to increase their regional rather than global status. Given today's nuclear non-proliferation norms, nuclear proliferation is not the most straightforward path to becoming a regional power and, as discussed in the previous chapters, may negatively impact a nation's position. This differs greatly from China's path to proliferation as neither country has any indication of proliferating for the same objectives.

India's proliferation, which was at least in part influenced by China's, had security and domestic motivations along with the necessary feasibility and external conditions that allowed for proliferation to occur. This is not the case with Egypt and Saudi Arabia which do not have all four of these factors in place. Both Middle Eastern nations lack elements that would provide an easy transition into becoming a nuclear power.



Moreover, unlike Pakistan which proliferated due to what it viewed as the existential threat of India's nuclear development, neither Egypt nor Saudi Arabia view Iran as a critical threat to their survival. This substantiates the other variables that point to restraint. If Iran were to become a more pressing security concern it could legitimize the development of nuclear weapons and supersede other factors. Or, if either nation's domestic considerations or international situation changed, they could combine to modify the prediction of nuclear restraint.

At present, both Egypt and Saudi Arabia do not have the factors in place that would suggest a cascade of proliferation similar to that of China, India, and Pakistan. International norms have changed since China's proliferation and as Egypt and Saudi Arabia are not seeking the status of a superpower, it is unlikely they would achieve their regional aspirations through nuclear proliferation. Moreover, they do not have all four of the motivations in place as were present in the case of India, nor would they view Iran as an existential threat as Pakistan did with India. In both case studies the nations in question would likely have more to lose than to gain from nuclear proliferation. The threat Iran possesses is unlikely to cause imminent harm to either country and there are steps the international community would likely take to support Saudi Arabia and Egypt as well as to discourage them from proliferating.<sup>273</sup> The more likely reaction would be for both nations to continue on their current path of slowly building nuclear infrastructure for peaceful purposes. If the variables changed, they could reassess their nuclear stance and already have a degree of nuclear latency.

---

<sup>273</sup> Christopher Hobbs and Matthew Moran, "Living with an Iranian Bomb: Preventing Further Proliferation in the Middle East," in *Exploring Regional Responses to a Nuclear Iran: Nuclear Dominoes?* ed. Matthew Moran (Basingstoke: Palgrave Macmillan, 2013), 102, <https://ebookcentral.proquest.com/lib/umanitoba/detail.action?docID=1441235>.

The theory of nuclear proliferation occurring in a cascade or causing a domino effect is based on historical evidence and is a reasonable scenario to consider. On the other hand, it is one of many possible reactions to nuclear proliferation and its occurrence shouldn't be assumed to be the only option. Iran developing nuclear weapons could plausibly spark nations in the region to proliferate, but it is more probable that restraint will occur. Based on analyzing the reasons why countries decide to develop nuclear weapons in the context of Egypt and Saudi Arabia, the two countries most likely to proliferate as a result of Iran, it is predicted that unless factors changed neither country would view Iranian proliferation as a significant enough threat to face the negative ramification of following Iran.

## Bibliography

- “Egypt - Saudi Arabia: Allies in Rare Public Row.” *Africa Research Bulletin: Political, Social and Cultural Series* 53, no.10 (2016): 21199B–21200C. <https://doi.org/10.1111/j.1467-825X.2016.07335.x>.
- “Egypt: Foreign Assistance.” Foreign Assistance.gov. Last modified June 21, 2019. <https://www.foreignassistance.gov/explore/country/Egypt>.
- “Site Approval for Egyptian Nuclear Power Plant.” *World Nuclear News*. April 10, 2019. <http://world-nuclear-news.org/Articles/Site-approval-for-Egyptian-nuclear-power-plant>.
- “The Perception of Egyptians Regarding Friendly and Hostile Countries.” Baseera: The Egyptian Center for Public Opinion Research. September 29, 2015. <http://baseera.com.eg/EN/RecentPolls2.aspx?ID=84>.
- Abuelghanam, Debbie, and Naser Tahboub. “Mixed Messages: Iran versus Saudi Arabia and GCC.” *Contemporary Review of the Middle East* 5, no. 4 (2018): 365–86. <https://doi.org/10.1177/2347798918795937>.
- Abulof, Uriel. “Revisiting Iran’s Nuclear Rationales.” *International Politics* 51, no. 3 (2014): 404–15. <https://doi.org/10.1057/ip.2014.9>.
- Ahmad, Ali, and M.V. Ramana. “Too Costly to Matter: Economics of Nuclear Power for Saudi Arabia.” *Energy* 69 (2014): 682–94. <https://doi.org/10.1016/j.energy.2014.03.064>.
- Ahmedullah, Mohammed. “Let ‘Em Eat Nukes: Economic Effects of Armament by India and Pakistan.” *Bulletin of the Atomic Scientists* 56, no. 5 (2000): 52–7. <https://doi-org.uml.idm.oclc.org/10.1080/00963402.2000.11456994>.
- Al- Badi, Awadh. “Saudi-Iranian Relations: A Troubled Trajectory.” In *Security and Bilateral Issues between Iran and Its Arab Neighbours*. Edited by Bahgat, Gawdat, Anoushiravan Ehteshami, and Neil Quilliam, 189–210. Cham: Springer International Publishing, 2016.
- Alberque, William. “The NPT and the Origins of NATO’s Nuclear Sharing Arrangements.” *IFRI Proliferation Papers*, no. 57 (2017): 1–58. [https://www.ifri.org/sites/default/files/atoms/files/alberque\\_npt\\_origins\\_nato\\_nuclear\\_2017.pdf](https://www.ifri.org/sites/default/files/atoms/files/alberque_npt_origins_nato_nuclear_2017.pdf).
- Al-Falih, Khalid. Interview with Rania El Gamal and Katie Paul. “Saudi Energy Minister Q&A with Reuters.” Reuters, December 20, 2017. <https://www.reuters.com/article/us-oil-saudi-minister-text/saudi-energy-minister-qa-with-reuters-idUSKBN1EE2RX>.
- Allin, Dana, and Steven Simon. *The Sixth Crisis: Iran, Israel, America and the Rumors of War*. New York: Oxford University Press, 2010.

- Al-Tamimi, Naser. "Will Riyadh Get the Bomb?" *Middle East Quarterly* 20, no.2 (2013): 49–57. <http://uml.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=85845488&site=ehost-live>.
- Avalon Project at Yale Law School. "Mutual Defense Treaty Between the United States and the Republic of Korea, October 1, 1953." Lillian Goldman Law Library. Accessed August 21, 2020. [https://avalon.law.yale.edu/20th\\_century/kor001.asp](https://avalon.law.yale.edu/20th_century/kor001.asp).
- Bagla, Pallava, and Andrew Lawler. "Experts Search for Details After Indian Nuclear Tests." *Science* 280, no. 5367 (1998): 1189. <https://doi.org/10.1126/science.280.5367.1189>.
- Bahgat, Gawdat. "A Mideast Nuclear-Weapons-Free Zone: Pie in the Sky." *Middle East Policy* 22, no. 3 (2015): 27–35. <https://doi.org/10.1111/mepo.12140>.
- Bahgat, Gawdat. "A Nuclear Arms Race in the Middle East: Myth or Reality?" *Mediterranean Quarterly* 22, no. 1 (2011): 27–40. <https://doi.org/10.1215/10474552-1189638>.
- Bahgat, Gawdat. "Egypt and Iran: The 30-Year Estrangement." *Middle East Policy* 16, no. 4 (2009): 47–54. <https://doi.org/10.1111/j.1475-4967.2009.00413.x>.
- Bahgat, Gawdat. "Egyptian Regional Policy: National Security, Energy and Water." In *Reassessing Order and Disorder in the Middle East: Regional Imbalance or Disintegration?* Edited by Robert Mason, 159-72. Lanham, Maryland: Rowman & Littlefield, 2017.
- Bahgat, Gawdat. "Nuclear Proliferation: The Case of Saudi Arabia." *Middle East Journal* 60, no. 3 (2006): 421-43. <https://doi.org/10.3751/60.3.11>.
- Bahgat, Gawdat. *Proliferation of Nuclear Weapons in the Middle East*. Gainesville: University Press Florida, 2007.
- Blades, David, and Joseph Siracusa. *A History of U.S. Nuclear Testing and Its Influence on Nuclear Thought, 1945–1963*. Lanham, Maryland: Rowman & Littlefield Publishers, 2014.
- Bowen, Wyn, and Matthew Moran. "Living with Nuclear Hedging: The Implications of Iran's Nuclear Strategy." *International Affairs* 91, no. 4 (2015): 687–707. <https://doi.org/10.1111/1468-2346.12337>.
- Carranza, Mario. "Can the NPT Survive? The Theory and Practice of US Nuclear Non-Proliferation Policy after September 11." *Contemporary Security Policy* 27, no. 3 (2006): 489–525. <https://doi.org/10.1080/13523260601060537>.
- Central Intelligence Agency. "Saudi Arabia." *The World Factbook*. Washington, DC: Central Intelligence Agency, 2016. <https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html>.

Cirincione, Joseph. *Bomb Scare: The History and Future of Nuclear Weapons*. New York: Columbia University Press, 2007.

Cordesman, Anthony. *Military Spending: The Other Side of Saudi Security*. Center for Strategic and International Studies, 2018. <http://search.proquest.com/docview/2022925249/>.

Cordesman, Anthony. *Saudi Arabia: National Security in a Troubled Time*. Santa Barbara: Praeger Security International, 2009.

Davenport, Kelsey. "Saudi Arabia Seen to Build Missile Factory." *Arms Control Today*, March 4, 2019. Assessed April 11, 2019. <https://www.armscontrol.org/act/2019-03/news-briefs/saudi-arabia-seen-build-missile-factoryPage>.

Davenport, Kelsey and Julia Masterson. "The Limits of Breakout Estimates in Assessing Iran's Nuclear Program." *Arms Control Association*, volume 12, no. 6. August 4, 2020. <https://www.armscontrol.org/issue-briefs/2020-08/limits-breakout-estimates-assessing-irans-nuclear-program>.

Dixit, Aabha. "IAEA Director General Visits Egypt, Highlights Support for Peaceful Nuclear Energy." IAEA Office of Public Information and Communication, February 5, 2019. <https://www.iaea.org/newscenter/news/iaea-director-general-visits-egypt-highlights-support-for-peaceful-nuclear-energy>.

Drollette, Dan. "View from the inside: Prince Turki al-Faisal on Saudi Arabia, nuclear energy and weapons, and Middle East Politics." *Bulletin of the Atomic Scientists*, 72, no. 1 (2016): 16–24. <https://doi.org/10.1080/00963402.2016.1124655>.

Eisenhower, Dwight. "Atoms for Peace Address Before the General Assembly of the United Nations on Peaceful Uses of Atomic Energy," (1953). <https://www.iaea.org/about/history/atoms-for-peace-speech>.

El- Sisi, Abdel Fatah. "Address of President Abdel Fattah Al-Sisi Commemorating June 30 Revolution." Speech. Cairo: State Information Services, July 2, 2018. <http://www.sis.gov.eg/Story/132112/Address-of-President-Abdel-Fattah-Al-Sisi-Commemorating-June-30-Revolution?lang=en-us>.

El-Sisi, Abdel Fatah. "Statement of H.E. Abdel Fattah Al-Sisi President of the Arab Republic of Egypt before the 73<sup>rd</sup> Session of the United Nations General Assembly." Speech. New York: General Assembly of the United Nations, September 25, 2018. [https://gadebate.un.org/sites/default/files/gastatements/73/eg\\_en.pdf](https://gadebate.un.org/sites/default/files/gastatements/73/eg_en.pdf).

Fitzpatrick, Mark. "Assessing the JCPOA." In *Adelphi Series: Uncertain Future: The JCPOA and Iran's nuclear and missile programmes*. By Mark Fitzpatrick, Michael Elleman and Paulina Izewicz, 57, no. 466-467 (2017): 19–60. <https://doi.org/10.1080/19445571.2017.1555914>.

- Fitzpatrick, Mark. "Saudi Arabia, Pakistan and the Nuclear Rumour Mill." *Survival*, 57, no. 4, (2015):105–8. <https://doi.org/10.1080/00396338.2015.1068562>.
- Fitzpatrick, Mark. "Will Nuclear Energy Plans in the Middle East Become Nuclear Weapons Strategies?" *International Relations* 22, no. 3 (2008): 381–85. <https://doi.org/10.1177/0047117808094184>.
- Froscher, Torrey. "Anticipating Nuclear Proliferation: Insights from the Past." *The Nonproliferation Review* 13, no. 3, (2006): 467–77. <https://doi.org/10.1080/10736700601071439>.
- Fuhrmann, Matthew, and Benjamin Tkach. "Almost Nuclear: Introducing the Nuclear Latency Dataset." *Conflict Management and Peace Science* 32, no. 4 (2015): 443–61. <https://doi.org/10.1177/0738894214559672>.
- Goldberg, Stephen and Robert Rosner. *Nuclear Reactors: Generation to Generation*. Cambridge: American Academy of Arts and Sciences, 2011. <https://www.amacad.org/sites/default/files/publication/downloads/nuclearReactors.pdf>.
- Güney, Nurşin. "Is the Nuclear Cascade Story in the Middle East Real?" *Perceptions* 16, no. 2 (2011): 43–59. <https://search.proquest.com/docview/920195329/>.
- Guzansky, Yoel. "Civilian Nuclear Development in the Arabian Peninsula: Prestige, Energy, and Iran." *Journal of Arabian Studies* 5, no.1 (2015): 67-81. <https://doi.org/10.1080/21534764.2015.1050879>.
- Guzansky, Yoel. "Questioning Riyadh's Nuclear Rationale." *Middle East Quarterly* 20, no.2 (2013): 59–64. <http://uml.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=85845489&site=ehost-live>.
- Heuser, Beatrice, and Kristan Stoddart. "Difficult Europeans: NATO and Tactical/Non-Strategic Nuclear Weapons in the Cold War." *Diplomacy & Statecraft* 28, no. 3 (2017): 454–476. <https://doi.org/10.1080/09592296.2017.1347446>
- Hobbs, Christopher and Matthew Moran. "Egypt: Domestic Uncertainty, Nuclear Consistency." In *Exploring Regional Responses to a Nuclear Iran: Nuclear Dominoes?* Edited by Matthew Moran. Basingstoke: Palgrave Macmillan, 2013. 42-54. <https://ebookcentral.proquest.com/lib/umanitoba/detail.action?docID=1441235>.
- Hobbs, Christopher and Matthew Moran. "Living with an Iranian Bomb: Preventing Further Proliferation in the Middle East." Edited by Matthew Moran. Basingstoke: Palgrave Macmillan, 2013. 93-105. <https://ebookcentral.proquest.com/lib/umanitoba/detail.action?docID=1441235>.
- Hobbs, Christopher and Matthew Moran. "Saudi Arabia: The Logic of Restraint." In *Exploring Regional Responses to a Nuclear Iran: Nuclear Dominoes?* Edited by Matthew Moran. Basingstoke: Palgrave Macmillan, 2013. 28-39. <https://ebookcentral.proquest.com/lib/umanitoba/detail.action?docID=1441235>.

- Hymans, Jacques. *The Psychology of Nuclear Proliferation Identity, Emotions, and Foreign Policy*. Cambridge: Cambridge University Press, 2006.
- International Atomic Energy Agency. "International Atomic Energy Agency Statute." 1957, Amended 1989. <https://www.iaea.org/about/statute>.
- International Atomic Energy Agency. "More on Safeguards agreements." Accessed March 4, 2020. <https://www.iaea.org/topics/safeguards-legal-framework/more-on-safeguards-agreements>.
- International Atomic Energy Agency. "Safeguards Legal Framework: Additional Protocol." Accessed February 11, 2019. <https://www.iaea.org/topics/additional-protocol>.
- International Atomic Energy Agency. "Status of Small Quantities Protocols." Accessed February 11, 2019. <https://www.iaea.org/topics/safeguards-legal-framework/status-small-quantities-protocols>.
- Joshi, Yogesh, and Frank O'Donnell. *India and Nuclear Asia : Forces, Doctrine, and Dangers*. Washington: Georgetown University Press, 2019.
- Juneau, Thomas, and Sam Razavi. "Costly Gains: A Cost–benefit Assessment of Iran’s Nuclear Program." *The Nonproliferation Review* 25, no. 1–2 (2018): 69–86. <https://doi.org/10.1080/10736700.2018.1477456>.
- Kamp, Karl-Heinz, and Robertus Remkes. "Options for NATO Nuclear Sharing Arrangements." In *Reducing Nuclear Risks in Europe: A Framework for Action*, edited by Steve Andreasen and Isabelle Williams, 76-95. Washington, DC: Nuclear Threat Initiative, 2011. [https://media.nti.org/pdfs/NTI\\_Framework\\_full\\_report.pdf](https://media.nti.org/pdfs/NTI_Framework_full_report.pdf).
- Karim, Umer. "The Evolution of Saudi Foreign Policy and the Role of Decision-making Processes and Actors." *The International Spectator* 52, no. 2 (2017): 71-88. <https://doi.org/10.1080/03932729.2017.1308643>.
- Kaushik, B.M. "Japan Ratifies NPT." *China Report* 12, no. 3 (1976): 7–10. <https://doi.org/10.1177/000944557601200302>.
- Kaye, Dalia, and Frederic Wehrey. "A Nuclear Iran: The Reactions of Neighbours." *Survival* 49, no. 2 (2007): 111–128. <https://doi.org/10.1080/00396330701437777>.
- Kennedy, John. "News Conference 52." *State Department Auditorium*, March 21, 1963. Accessed March 21, 2019. <https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-press-conferences/news-conference-52>.
- Khurram Khan, Muhammad, and Babar Khan, Muhammad. *Research, Innovation and Entrepreneurship in Saudi Arabia: Vision 2030*. Milton: Taylor & Francis Group, 2020.

- King Abdullah City for Atomic and Renewable Energy. "Future Energy: The Vision." K●A●CARE. Accessed February 28, 2018. <https://www.kacare.gov.sa/en/FutureEnergy/Pages/vision.aspx>.
- Kirschenbaum, Joshua. "Operation Opera: An Ambiguous Success." *Journal of Strategic Security* 3, no. 4 (2010): 49-62. <https://doi.org/10.5038/1944-0472.3.4.3>.
- Kittrie, Orde. "Averting Catastrophe: Why the Nuclear Nonproliferation Treaty is Losing its Deterrence Capacity and How to Restore it?" *Michigan Journal of International Law* 28, no. 2 (2007): 337-430. <http://search.proquest.com/docview/208562823/>.
- Knopf, Jeffrey. *Security Assurances and Nuclear Nonproliferation*. Stanford: Stanford University Press, 2012.
- Konsowa, Ahmed, Mosallam, Ayman, and Ehab Hanafi. "Advanced Construction Process for Modern Nuclear Power Plants." *International Journal of Arts & Sciences* 5, no. 6 (2012): 73-91. <http://search.proquest.com/docview/1366064853/>.
- Kristensen, Hans and Matt Korda. "United States nuclear forces, 2019." *Bulletin of the Atomic Scientists* 75 no. 3 (2019): 122-34. <https://doi.org/10.1080/00963402.2019.1606503>.
- Kristensen, Hans, and Matt Korda. "Status of World Nuclear Forces." Federation of American Scientists. Last modified April 2019. "<https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces>."
- Lavoy, Peter. "Nuclear Proliferation Over the Next Decade: Causes, Warning Signs, and Policy Responses." *The Nonproliferation Review* 13, no. 3 (2006): 433-54. <https://doi.org/10.1080/10736700601071363>.
- Lindsay, James, and Ray Takeyh. "After Iran Gets the Bomb." *Foreign Affairs*, 89, no. 2 (2010): 22-49. <http://uml.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=51433475&site=ehost-live>.
- Mabon, Simon. *Saudi Arabia and Iran: Soft Power Rivalry in the Middle East*. London: I.B. Tauris, 2013.
- Mehta, Rupal, and Rachel Whitlark. "Unpacking the Iranian Nuclear Deal: Nuclear Latency and U.S. Foreign Policy." *The Washington Quarterly* 39, no. 4 (2016): 45-61. <https://doi.org/10.1080/0163660X.2016.1261567>.
- Middle East Economic Survey. "Saudi Approves Scaled-Back Nuclear Plans, Studies Reactors Large and Small." MEES, vol. 60, no. 30, 2017. Accessed February 21, 2019. <https://www.mees.com/2017/7/28/power-water/saudi-approves-scaled-back-nuclear-plans-studies-reactors-large-and-small/124f40b0-739d-11e7-b966-b5da8a91fcd8>.
- Miller, Nicholas, and Tristan Volpe. "Abstinence or Tolerance: Managing Nuclear Ambitions in Saudi Arabia." *The Washington Quarterly* 41, no. 2 (2018): 27-46. <https://doi.org/10.1080/0163660X.2018.1484224>.



- Miller, Nicholas. "Nuclear Dominoes: A Self-Defeating Prophecy?" *Security Studies* 23, no. 1 (2014): 33–73. <https://doi.org/10.1080/09636412.2014.874189>.
- Monshipouri, Mahmood, and Anthony Zmary. "Re-Evaluating Iran-Egypt Relations: A Look at the Evolving Geopolitical Context." *Insight Turkey* 19, no. 2 (2017): 215–229. <https://doi.org/10.25253/99.2017192.11>.
- Narang, Vipin. "Strategies of Nuclear Proliferation: How States Pursue the Bomb." *International Security* 41, no. 3 (2017): 110–50. [https://doi.org/10.1162/ISEC\\_a\\_00268](https://doi.org/10.1162/ISEC_a_00268).
- Nephew, Richard. "Libya: Sanctions Removal Done Right? A Review of the Libyan Sanctions Experience, 1980–2006." Center on Global Energy Policy, Columbia University (2018). <https://doi.org/10.7916/D8H437J8>.
- Nuclear Threat Initiative. "Egypt: Missile." Last modified January 2015. <https://www.nti.org/learn/countries/egypt/delivery-systems/>.
- Nuclear Threat Initiative. "Iran: Missile." Last modified June 2020. <https://www.nti.org/learn/countries/iran/nuclear>.
- Pella, Peter J. *The Midlife Crisis of the Nuclear Nonproliferation Treat*. San Rafael: Morgan & Claypool Publishers, 2016.
- Procida, Frank. "Nuclear Dominoes: Real or Imagined?" *International Journal of Intelligence and Counter Intelligence* 23, no. 3 (2010): 461–73. <https://doi.org/10.1080/08850601003772828>.
- Reif, Kingston. "Saudi Arabia Threatens to Seek Nuclear Weapons." *Arms Control Today*, 48 no. 5 (2018): 28–9. <http://search.proquest.com/docview/2052762285/>.
- Rezaei, Farhad. "Iran's Nuclear Agreement: The Three Specific Clusters of Concerns." *Insight Turkey* 20, no. 2 (2018): 167–99. <https://doi.org/10.25253/99.2018202.13>.
- Rezaei, Farhad. "The American Response to Pakistani and Iranian Nuclear Proliferation: A Study in Paradox." *Asian Affairs* 48, no. 1 (2017): 27–50. <https://doi.org/10.1080/03068374.2016.1267436>.
- Ricotta, Jill. "The Arab Shi'a Nexus: Understanding Iran's Influence in the Arab World." *The Washington Quarterly* 39, no. 2 (2016): 139–54. <https://doi.org/10.1080/0163660X.2016.1204414>.
- Rublee, Maria. "Egypt's Nuclear Weapons Program: Lessons Learned." *The Nonproliferation Review* 13, no. 3 (2006): 555–67. <https://doi.org/10.1080/10736700601071637>.

- Rublee, Maria. "Egyptian Nuclear Decision Making." In *Nonproliferation Norms: Why States Choose Nuclear Restraint*, 99-149. Athens: University of Georgia Press, 2009. [muse.jhu.edu/book/11398](http://muse.jhu.edu/book/11398).
- Rublee, Maria. "Leadership Transitions and Nuclear Futures in Egypt and Libya." In *The Nuclear Question in the Middle East*. Edited by Mehran Kamrava, 49-82. London: Hurst & Company, 2012.
- Sagan, Scott. "The Causes of Nuclear Weapons Proliferation." *Annual Review of Political Science* 14, no. 1 (2011): 225-44. <https://doi.org/10.1146/annurev-polisci-052209-131042>.
- Sagan, Scott. "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb." *International Security* 21, no. 3 (1996): 54-86. <https://doi.org/10.2307/2539273>.
- Salman, Mohammed Bin. Interview with Norah O'Donnell. "Saudi Arabia's Heir to the Throne Talks to 60 Minutes." *60 Minutes*. CBS, March 19, 2018. <https://www.cbsnews.com/news/saudi-crown-prince-talks-to-60-minutes/>.
- Saudi Press Agency. "HRH Crown Prince Inaugurates and Lays Foundation Stones for Seven Strategic Projects, Including Saudi Arabia's First Nuclear Research Reactor, & Aircraft Fuselage Factory." *SPA*. November 6, 2018. Accessed Feb 26, 2019. <https://www.spa.gov.sa/viewstory.php?lang=en&newsid=1838032>.
- Saudi Press Agency. "Saudi Aid worth \$33 Billion for 78 Countries and Yemen in the Top of the List." *SPA*. June 21, 2018. Accessed Feb 18, 2020. <https://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=1777850>.
- Saunders, Emily, and Bryan Fearey. "The Least Bad Option? Extending the Nuclear Umbrella to the Middle East." *Comparative Strategy* 33, no. 2 (2014): 122-30. <https://doi.org/10.1080/01495933.2014.897117>.
- Sayyah, T. A., and El Shatoury, H. M. "Uranium resources and reserves in Egypt." In *Assessment of Uranium Resources and Supply: Proceedings of a Technical Committee Meeting*, 51-68. Vienna: International Atomic Energy Agency (IAEA), 1991. [https://inis.iaea.org/search/search.aspx?orig\\_q=RN:22068681](https://inis.iaea.org/search/search.aspx?orig_q=RN:22068681)
- Sharp, Jeremy. "Egypt: Background and U.S. Relations." Congressional Research Service. Last modified March 12, 2019. <https://fas.org/sgp/crs/mideast/RL33003.pdf>.
- Sherrill, Clifton. "Why Iran Wants the Bomb and What It Means for US Policy." *The Nonproliferation Review* 19, no. 1 (2012): 31-49. <https://doi.org/10.1080/10736700.2012.655084>.
- Shuja, Sharif. "India and Nuclear Weapons." *American Asian Review* 19, no. 3 (2001): 103-19. <http://search.ebscohost.com.uml.idm.oclc.org/login.aspx?direct=true&db=a9h&AN=5719659&site=ehost-live>.

- State Information Service. "An Egyptian Court Bans all Muslim Brotherhood Activities." September 25, 2013. Last modified, August 13, 2014. <http://www.sis.gov.eg/Story/79216/An-Egyptian-Court-bans-all-Muslim-Brotherhood-activities?lang=en-us>.
- State Information Service. "Court Announces Reasons Behind Lifetime Sentence Against Morsi and Death Sentences Against 16 MB leaders." July 2, 2015. <http://www.sis.gov.eg/Story/95190/Court-announces-reasons-behind-lifetime-sentence-against-Morsi-and-death-sentences-against-16-MB-leaders?lang=en-us>.
- State Information Service. "Court Blacklists MB as Terrorist Group." February 24, 2014. Last updated August 13, 2014. <http://www.sis.gov.eg/Story/79215/Court-blacklists-MB-as-terrorist-group?lang=en-us>.
- State Information Service. "President Sisi Issues Decree Extending State of Emergency." April 20, 2020. <https://www.sis.gov.eg/Story/145823/President-Sisi-issues-decree-extending-state-of-emergency?lang=en-us>.
- Stenslie, Stig. "The End of Elite Unity and the Stability of Saudi Arabia." *The Washington Quarterly* 41, no. 1 (2018) 61-82. <https://doi.org/10.1080/0163660X.2018.1445360>.
- Sukin, Lauren. "Beyond Iran: Containing Nuclear Development in the Middle East." *Nonproliferation Review* 22, no. 3-4 (2015): 379-400. <https://doi.org/10.1080/10736700.2016.1152010>.
- Telhami, Shibley. "2012 Public Opinion Survey." The Anwar Sadat Chair for Peace and Development, University of Maryland. May 21, 2012. <https://sadat.umd.edu/polls/2012-and-earlier-public-opinion-polls-and-reports>.
- The Embassy of the Kingdom of Saudi Arabia. *Basic Law of Governance*. Chapter Two: The Law of Governance, Articles 6-7. <https://www.saudiembassy.net/basic-law-governance>.
- The United Nations. "History of the Treaty" *In Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons*, 2015. <https://www.un.org/disarmament/wmd/nuclear/npt/>.
- The United Nations. "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)." July 1, 1968. <https://www.un.org/disarmament/wmd/nuclear/npt/>.
- The World Bank. "Total Population." Washington, D.C.: The World Bank. Accessed July 31, 2019. <https://data.worldbank.org/indicator/SP.POP.TOTL?view=chart>.
- Thomas, Steve. "Russia's Nuclear Export Programme." *Energy Policy* 121 (2018): 244. <https://doi.org/10.1016/j.enpol.2018.06.036>.
- U.S. Department of Defense. "Joint Communiqué of the 51<sup>st</sup> ROK-U.S. Security Consultative Meeting." Washington, D.C., November 16, 2019. <https://www.defense.gov/Newsroom/Releases/Release/Article/2018651/joint-communicu-of-the-51st-rok-us-security-consultative-meeting>.

- U.S. Department of State. "Joint Comprehensive Plan of Action." July 14, 2015. <https://2009-2017.state.gov/documents/organization/245317.pdf>.
- U.S. Department of State. *Security Cooperation with Saudi Arabia Fact Sheet*. U.S. Bureau of Political-Military Affairs. January 2019. Accessed Feb 2, 2019. <https://www.state.gov/t/pm/rls/fs/2019/288671.htm>.
- United Nations Department for Disarmament Affairs. "Egypt: Ratification of Treaty on the Non-Proliferation of Nuclear Weapons (NPT)." February 26, 1981. <http://disarmament.un.org/treaties/a/npt/egypt/rat/london>.
- USAID. "Egypt." Foreign Aid by Country, USAID Foreign Aid Explorer. Last modified June 13, 2019. [https://explorer.usaid.gov/cd/EGY?measure=Obligations&fiscal\\_year=2018](https://explorer.usaid.gov/cd/EGY?measure=Obligations&fiscal_year=2018).
- Van der Meer, Sico. "State's Motivations to Acquire or Forgo Nuclear Weapons: Four Factors of Influence." *Journal of Military and Strategic Studies* 17, no. 1 (2016): 209-36. <https://jmss.org/article/view/58151/pdf>.
- World Nuclear Association. "Nuclear Power in Egypt." Last modified April 2019. <https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/egypt.aspx>.
- World Nuclear Association. "Plutonium." Last modified December 2018. <https://www.world-nuclear.org/information-library/nuclear-fuel-cycle/fuel-recycling/plutonium.aspx>.
- World Nuclear Association. "Nuclear Power in South Africa." Last modified August 2020. <https://www.world-nuclear.org/information-library/country-profiles/countries-o-s/south-africa.aspx>.
- Yasso, Khalil. "Country Nuclear Power Profiles: Egypt." International Atomic Energy Agency. Last modified 2015. [https://www-pub.iaea.org/MTCD/Publications/PDF/cnpp\\_2018/countryprofiles/Egypt/Egypt.htm](https://www-pub.iaea.org/MTCD/Publications/PDF/cnpp_2018/countryprofiles/Egypt/Egypt.htm).