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# Missing in Action: Missiles Control in the Middle East

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## Abstract

Advanced ballistic and cruise missiles have become a salient feature of the Middle Eastern security landscape. More states are either developing indigenous production capabilities or importing these missiles than ever before and their use has also become a frequent occurrence in regional conflicts. Despite that, the issue remains one of the least examined aspects of regional arms control. This research article surveys the historical and contemporary missiles landscape in the Middle East and the evolution of regional debates aimed at arms control. It demonstrates the disconnect between a regional arms dynamic marked by competitiveness and a fragmented and underdeveloped ideational and normative arms control framework. The article identifies some of the challenges in addressing missiles control in the region and proposes a taxonomy of modalities for addressing missiles control including cross-cutting themes that can frame the substance and content of regional missiles control.

## Keywords

missiles; Middle East; weapons of mass destruction free zone; regional security, arms control, proliferation

## Introduction

The Middle East appears on the cusp of entering a new phase of interest in sophisticated missiles. This growing interest is evident among many regional governments who are making considerable investments into expanding their missile arsenals both quantitatively but also qualitatively through advancements in range and accuracy. As many as 11 regional states are currently in possession of ballistic and cruise missiles of ranges exceeding 250 Km. The region is also seeing growing capabilities from key regional non-state actors who have managed to make strides in acquiring and using missile systems. Such groups like Hizbullah in Lebanon and the Houthis in Yemen are emerging as new players in the regional missile landscape. Whether used by states or non-state actors, ballistic and cruise missiles have left their mark on several regional conflicts including in Iraq, Syria and Yemen among others.

Despite the growing salience of missile politics in the region, the issue remains one of the least examined aspects of regional arms control. Currently, the proposal to establish a Weapons of Mass Destruction Free Zone (WMDFFZ) in the Middle East occupies a prominent place in multilateral arms control and disarmament diplomacy. Discussion about what constitutes tangible progress towards the zone has long been influential in the review of the Nuclear Non-

proliferation Treaty (NPT) (Dhanapala 2014; Mian 2021). What is sometimes less clearly acknowledged is that such proposal contains references to addressing regional delivery vehicles including missiles. That element of the proposal however is frequently overshadowed by discussions about nuclear weapons in the region whether Israeli acquisition or Iranian ambitions and their impact on other regional states (Seybert 2019; Russell 2005, 23-50; Dassa Kaye 2007). It is also eclipsed by recent focus on chemical weapons as evidenced by their repeated use in the context of the Syrian civil war (Chapman, Elbahtimy and Martin 2018; Price 2019). Despite being an integral part of the WMDFZ proposal, the issue of controlling missiles remains one of the least studied and addressed dimension within the scope of the proposal.

This research article seeks to highlight the importance of considering missiles arms control as part of discussions on regional arms control. It argues that the regional missiles landscape is seeing significant changes while the institutional and ideational infrastructure that is proposed to deal with the issue remain fragmented and underdeveloped. The duality of widespread interest and lack of effective control measures risks presenting missiles as the key frontier of arms competition in the region. The article starts by providing a historically informed trajectory of interest in missiles in the region as well as survey of how the issue has been dealt with in the academic literature. It then surveys how the issue of missiles evolved in regional arms control discussions. The article then identifies some of the challenges in addressing missiles control in the region and proposes options for addressing missiles control in the region including cross-cutting themes that can frame the substance and content of regional missiles control.

## Waves of regional missile interest in the region

One can discern three chronological episodes of interest in advanced missiles in the region described in this article as waves. While these waves have continuities across them, each presents a unique set of dynamics and features that can be distinct in character and provide a useful roadmap to understanding the longer trajectory of interest in missiles in the region. The first wave represents the start of the missile age in the Middle East and unfolded during the 1950s and 1960s. Then, missiles started to leave their mark on international politics as a currency of international power and regional actors started to explore their options and develop their own indigenous capabilities in this area.

The two key actors in this first wave were Israel and Egypt. Israel started to experiment with rockets and ballistic missiles in the late 1950s and launched its first missile test of 'Shavit II' in 1961 (presented at the time as an experimental weather rocket) (Cohen 1998, 116). This was followed by close technical collaboration with the French that led to efforts to produce a joint ballistic missile system under the name of 'Jericho' (Cohen 2011, 228). Cooperation with France stalled following Israeli occupation of Arab territories in 1967. This drove Israel to develop its own indigenous missile production base from the 1970s onwards in lieu of previous reliance on French assistance (Bahgat 2019, 40). Around the same time, Israel started to explore missiles, Egypt was developing an indigenous ballistic missile programme that in part relied on recruitment of German scientists and technicians. This culminated in missile tests in 1962 of two ballistic missiles Al-Kahir and Al-Zafir. However, the programme ran into financial and

technical difficulties related to developing guidance and had achieved little tangible progress before being scaled down in the latter part of the 1960s (Sirrs 2007, 33-35, 155-156).

The 1970s and 1980s saw the second wave of regional missile interest. This saw a considerable expansion of the missile club in the region. Iraq, Libya, Syria among others started to purchase ballistic SCUD missiles from the Soviet Union and Saudi Arabia from China (Potter and Stulberg 1990). The Iran-Iraq war 1980-1988 was a key flashpoint that spurred significant investment in ballistic missiles by both sides of that conflict but also other regional states. Iraq invested in building variants of its SCUD stockpile including 'Al-Hussein'. Iran, through assistance from Libya and Syria, also acquired ballistic missiles. The result was the exchanges that came to be known as the 'war of the cities' (Segal 1988). It was during this period that Saudi Arabia, after being rebuffed by the United States as the traditional source of armaments, managed to acquire DF-3 missiles from China with range 750–4,000 km (Russell 2001, 73). Iraq and Egypt in the 1980s ran a secret programme in cooperation with Argentina aimed at missile development that was rolled back after its discovery (Sirrs 2007, Chapter 7). Israel cooperated with South Africa in missiles development and produced Jericho II during the 1980s (Kristensen and Korda 2022). It was this wave of regional interest that in part spurred the establishment of Missile Technology Control Regime (MTCR).<sup>1</sup>

The second wave ended with the destruction of Iraqi missiles with ranges below 150 km following Security Council Resolution 687 and the work of United Nations Special Commission (UNSCOM). But a new and third wave can be said to have started following the US and allied invasion of Iraq in 2003 onwards with spill on effects on regional security. This period saw the rise of Iranian influence in the region and a growing role for non-state actors. These dynamics and reactions to them, continue to shape the regional landscape till this day and contributing to widescale interest in missiles. A recent research paper published by the International Institute for Strategic Studies (IISS) surveying the missile landscape in the Middle East shows that 11 regional states are in possession of missiles of ranges in excess of 250 Km (Elbahtimy 2022). This reflects the scale of interest in the region in missiles.

Currently, Israel and Iran stand out among regional powers in terms of the sophistication of their missile capabilities and also their possession of relatively advanced indigenous missile production capabilities. This gives both countries a relatively higher independence from foreign suppliers. Israel's Jericho-2 ballistic missile can reach a range of 1,500 – 3,500 km depending on its payload and trajectory; with unconfirmed reports about a longer range Jericho 3 (Fitzpatrick 2021). Israel's missiles capabilities are also linked, although not exclusively, to nuclear missions. Israel is widely believed to have a functional nuclear delivery triad including land and submarine based nuclear missile launch capabilities (Krintensen and Korda 2022). Due to its opacity policy the exact capabilities and missions are not publicly advertised. Iran has the most diverse missile forces in terms of types, variants and ranges developed through an ambitious missile

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<sup>1</sup> The MTCR is a voluntary control regime that was established in 1987 to limit the spread of ballistic missiles, technologies related to them as well as unmanned delivery vehicles that could be used to deliver weapons of mass destruction

production programme. For example, at least 20 ballistic missile variants have been spotted in the Iranian arsenal with multiple ranges (IISS [2021]).

While Israel and Iran can be considered in a league of their own with respect to their missile capabilities particularly indigenous production potential, the rest of the region is not short on ambition. Arabian Peninsula states have growing externally sourced missile systems with Saudi Arabia paying significant attention to upscaling its capability. The country has developed 'Strategic Missile Force' and added Chinese longer range DF-21 ballistic missiles to its arsenal of DF-3 (Lewis 2014; Sonne 2019). Saudi Arabia has not publicly acknowledged its acquisition of DF-21 missiles which makes it difficult to discern Saudi motives in acquiring the new system, however competition with rival Iran and its growing missile programme are likely to factor in Riyadh's decision. Saudi Arabia also harbours ambitions for indigenous missile production. Other GCC states like UAE and Qatar as well as Egypt are investing into acquiring western origin cruise missiles with considerable ranges (IISS [2021], 14). But this period also saw the destruction of national missile arsenals for countries which previously held Soviet SCUD missiles and got engulfed in civil war such as in Syria, Libya and Yemen while such as well as Russian systems still exist in Algerian and Egyptian arsenals (Reuters 2015). One of the key features of the regional missile landscape is the role non-state actors are playing this includes groups like Hezbollah and Houthis that have also acquired significant missile capabilities (Shaikh and Williams 2018; Browning 2016). With the Houthis, their frequent use of missiles to attack targets as part of the war in Yemen provides a window into how such weapons can be used by non-state actors as part of conflict that extends regionally. In comparison, little is publicly known about Hezbollah's missile systems since their use in 2006 Lebanon war, but it is widely acknowledged that the group's arsenal has grown since in terms of range and sophistication.

## The ups and downs of studying regional missiles

To a large extent, academic interest in regional missile acquisitions has rhymed with and closely followed policy interest; particularly among western governments following missile developments in the Middle East. Consequently, the resulting literature has followed some of the key assumptions and preferences developed in the western policy world. This has also resulted in cyclical interest in the study of regional missiles. In the words of one scholar, the issue of ballistic missile in the Middle East can move from 'one of the most pressing issues in international security' into sinking to 'near invisibility' (Karp 1995).

The heydays for regional missile literature came as the shadow of the Cold War was receding and with it the military, economic and ideological confrontation between the United States and the Soviet Union. Security Studies started to increasingly direct its gaze towards regional security (Buzan and Hansen 2009, 176-182). With the lowering of access barriers to advanced weapons for middle powers, regional arms dynamics particularly for advanced weapons systems and missiles grew in significance (Fetter 1991; Nolan 1991). Interest in missiles also coincided with the growth of the literature on nuclear proliferation that also had in the post-cold war days a strong regional focus. Interestingly, most of this literature on missiles used the framing of the danger of missile technology proliferating out of control and particularly finding

its way to third world states (Karp 1988; Eisentein 1982; Nolan and Wheelon 1990). Within this framing, the Middle East was seen as particularly significant. As Carus described, it was the 'most dangerous area for missile proliferation' (Carus 1991, 12). In general, the literature was alarmist in tone and speaking to growing interest in restricting access to missile technology to a new profile of actors: regional authoritarian states (Miller 1989).

Regionally, Iraq became the poster case for interest in missiles. This followed the frequent use of ballistic missiles in the Iran-Iraq 'war of cities' that was also linked to the use of chemical weapons (McNaugher 1990). Iraq's invasion of Kuwait in 1990 further crystalized its clash with 'the new world order' and the regional tensions that followed saw Iraq's use of ballistic missiles against Israel and Saudi Arabia triggering wide interest in engaging with regional missile acquisitions and use (Carus 1991). UN Security Council Resolution 687 that mandated the verified destruction of Iraqi missiles of ranges exceeding 150 Km provided another window into the Iraqi programme and ways through which verification can be considered and implemented.

This interest in the Iraqi case lasted only in parallel with policy interest in Iraq's weapons programmes. It was followed by a period that saw the issue of regional missiles recede into relative oblivion as lamented by Karp (1995). The issue saw a later revival as a new wave of regional interest started to take hold and in particular with the growing advances achieved by Iran's quest for missiles. This body of literature also drew on growing understanding of some of the missile proliferation networks that was revealed as Libya renounced its WMD programme and in the process shedding more light on the workings of the AQ Khan network (Corera 2006, IISS 2007). This also extends to the development of a more nuanced understanding of the role DPRK played in the spread of regional missiles to the region and how that role has evolved (Pollack 2011).

A significant part of that literature took place in the shadow of Iran's missile programme (IISS 2010; Elleman 2015). The literature seldom expanded its focus beyond the policy problems emanating from Iran's fast advancing missiles programme. In this context, interest in wider regional dynamics took a backseat or provided the context for interest in Iran's missiles (Bahgat 2019). The polarisation of the US debate around the Iran nuclear deal between Democrats and Republicans added to the attention partisan think tanks paid to the issue of missiles. In particular, several of the conservative leaning research centres criticized the deal due to the lack of effective controls over Iranian missiles including the Heritage Foundation and the Washington Institute for Near East Policy (Eisenstadt 2015, Phillips and Brookes 2021; Brookes and Phillips 2021). But that focus is expanding with growing policy interest on missile developments on a global scale and this has been reflected in at least two high profile initiatives: the Missile Dialogue Initiative run by the International Institute of Strategic Studies (IISS) and Missile Defense Project at the Center for Strategic and International Studies (CSIS) both of which address the Middle East missile landscape within a global context.

## Missiles and the evolution of the regional arms control agenda

The issue of regional missile control made its first entry into arms control discussions in the context of Iraqi disarmament following the Iraq war of 1991. UN Security Council Resolution 687 included a reference to missiles which the resolution added to the goal of establishing WMD Free Zone in the region. Specifically, the resolution mentioned that Iraqi disarmament ‘represent steps towards the goal of establishing in the Middle East a zone free from weapons of mass destruction and all missiles for their delivery’ (United Nations Security Council Resolution 687). The WMD framing itself was an expansion of an earlier scope that focused on a nuclear weapon free zone in the Middle East.

After the end of the cold war and the heralding of a ‘new world order’ by H W Bush, the US government presented an initiative for a regional arms control for the Middle East. This capitalized on the sense of a new regional opening with Iraqi disarmament. The initiative was pledged in Bush’s speech to the US Congress in March 1991 and then was publicly released in the following May (Rosenthal 1991). The initiative had a dedicated section for ‘missiles’ alongside the categories of weapons of mass destruction. It proposed a freeze that covers ‘the acquisition, production, and testing of surface-to-surface missiles by states in the region with a view to the ultimate elimination of such missiles from their arsenals’ (White House 1991). Alongside this, there was an emphasis on restraint by suppliers who were encouraged to restrict export licences to only peaceful ends.

The Middle East Resolution adopted at the NPT Review and Extension Conference of 1995 is another key milestone. The resolution which was key to achieve the acquiescence of Arab delegations to the indefinite extension of the NPT without Israeli accession to the NPT (Crail and Pomper 2008; Aboul-Enein and Elbahtimy 2010). Significantly, that resolution expanded the scope of discussion of regional arms control. It calls upon regional states as well as NPT state parties to take practical steps in support of the establishment of a zone not only free of weapons of mass destruction but also of delivery systems.<sup>2</sup>

Since then, this formulation has continued to play a key role in setting the agenda and ambition for regional arms control. The resolution provided the terms of reference to the proposed 2012 Middle East Conference agreed as part of the NPT 2010 Action Plan (NPT 2010). And following the failure to convene that Conference, the Arab league sponsored decision in 2018 also used the 1995 Middle East resolution as providing the terms of reference for the new conference on the establishment of a Middle East free of nuclear weapons and other weapons of mass destruction (UNGA Decision 2018 A/C.1/73/L.22/Rev.1). Despite that, the issue of missiles and delivery vehicles more broadly were not explicitly addressed in the first or second sessions of the conference convened in 2019 and 2021 respectively (United Nations General Assembly 2021).

## The challenges of cooperative missile arms control in the Middle East

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<sup>2</sup> Operative paragraphs 5 and 6 of the Middle East Resolution from the 1995 NPT Review and Extension Conference.

The challenges for missiles control in the region are multiple but can be grouped in two distinct sets of challenges. The first set addresses challenges relating to security relations among states and also non-state actors in the Middle East. These broader security challenges lead to difficulty in establishing a meaningful arms control dialogue in the region regardless of the weapon system concerned. The second set of challenges addresses issues relating specifically to missiles in the region and their growing regional spread that present unique challenges for arms control. If the first set of factors provides insights into the long-term enduring challenges for broader regional arms control, the second set provides insights into some of the challenges relating to missiles in particular.

### The intractable politics of regional arms control

There are currently no region-wide mechanisms to control or limit ballistic or cruise missiles nor is there a concerted regional effort for arms control more broadly. Debates about regional arms control in the Middle East has proven so far challenging. Conflicting objectives and priorities as well as lack of trust between various regional states impede identifying common arms control goals that would be mutually beneficial. This, in turn, leads to lack of regional frameworks that could enable security cooperation between states in the region. As a result, there is currently no existing framework that combines the Arab states, Iran, Turkey, and Israel and allows for a sustained dialogue on regional security issues.

Despite this, there have been some confined regional breakthroughs in instituting forms of military restraint. The Egyptian-Israeli peace treaty has been in place since 1979 and involves some arms control measures regarding the de-militarization of certain geographical areas and limitations on the deployment of certain weapon systems. It also included provisions designed to verify that these restrictions and limitations are being fulfilled by all sides through various inspections mechanisms (Pregenzner, Vannoni, and Biringer 1996; Bar-Yaacov 1980). The same concept was considered for subsequent peace settlements in the context of the Arab-Israeli peace process (Hylton 2013). This example points to the possibility of pushing for verifiable regimes of military restraint among regional players.

Yet the historical record also shows that regional arms control remains challenging. An important example of this is the Arms Control and Regional Security (ACRS) working group that was formed in the early 1990s. The ACRS working group fitted within a larger structure heralded by the Madrid process involving two main tracks of regional dialogues: a bilateral track and a multilateral one covering region-wide issues (Kaye 1997). One of the working groups for the multilateral track was dedicated specifically to arms control and regional security and served as a unique regional forum for discussing issues related to weapons and security. It saw the participation of Israel alongside some of the key, but not all, Arab states. Among the notable regional absences were Iraq and Iran who took a stance against the broader Madrid process. This led to a series of meetings and discussions organised between officials from some regional states as well as several track II/non-official meetings between 1991-1995.



While ACRS presented a unique forum for regional arms control discussions, it also highlighted some of the structural difficulties facing meaningful regional arms control. Different approaches within the working group about what arms control would involve and the meaning of regional security stymied agreement on any practical or forward steps. On the one hand, Egypt and some of the Arab states were keen to discuss the regional nuclear imbalance notably Israel's nuclear capabilities (Fahmy 2001). On the other hand, Israel wanted to shift the discussion away from nuclear issues and into conventional weapons and general regional security (Feldman 1994). The former position called for arms control commitments on the nuclear front particularly pressing for timelines for Israeli nuclear disarmament whereas the latter position advocated less ambitious confidence building measures. The clash of priorities as well as the derailment of broader regional peace talks under the Madrid process led to the demise of the working group. This episode highlights that even within the context of peaceful relations, as that between Egypt and Israel, the issue of arms control can be intractable and challenging. One can only imagine what the outcome would be if Iran were participating in these discussions.

Another round of regional discussions on arms control started following the 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference. The Conference reached a 64-point action plan including practical steps on the establishment of a Weapons of Mass Destruction Free Zone (WMDFZ) in the Middle East (Johnson 2010). Among the action points was the convening of a conference with the participation of regional and other states to discuss the proposed WMDFZ by 2012 (Crail 2010). A Finnish facilitator was appointed to shepherd discussions with regional and international powers. Three rounds of negotiations were held by regional states in 2013 and 2014 in Glion, Switzerland. Ultimately, no agreement was reached on the modalities of such a conference or what it would cover leading to the demise of the process and an exchange of accusations about the responsibility for this failure (Davenport 2013; Mukhatzhanova 2014).

As a result of frustration due to inability to convene such conference, Arab states pushed towards convening such conference under the umbrella of the United Nations. In 2018, a UN General Assembly decision was adopted in support of holding of a diplomatic conference on the WMDFZ in the Middle East (Sanders-Zakre 2018). With a UN mandate in place, the conference was held in November 2019 and in 2021 in New York but without the participation of Israel and objections from the US and the UK (Masterson 2020). Without Israel's participation, the conference's ability to reach meaningful arms control measures that apply to the whole region is limited. All this points to the challenging nature of initiating meaningful arms control dialogue in the region. But in addition to this, controlling missiles in the region also present some additional challenges.

### Missile challenges

Interest in missiles in the region developed in response to multiple needs and with time domestic constituencies of support developed to sustain that interest. Missiles are frequently seen as a force multiplier by regional states that enable force projection outside their borders. This is particularly the case when, due to financial or technical reasons or both, it is more difficult to maintain and run an advanced air force or match the air supremacy by another

power. An example of this is Iran whose air force is much weaker than those of regional adversaries including Israel, Saudi Arabia or the UAE (Bahgat 2019). This has been exacerbated by the imposition of sanctions that for a long-time hindered Iran's ability to service or update its air force. In this context missiles are seen as an essential equalizer for Iranian military. In retaliation for the assassination of Qasem Soleimani the former head of the Islamic Revolution Guard, Iran used ballistic missiles to strike back at the United States with highly accurate precision. Iran launched a missiles attack on two US bases in Iraq (in Irbil and Al Asad, west of Baghdad) using between 15-22 ballistic missiles (BBC 2020). A similar logic applied in the case of Iraq although using missiles of an older generation and much less accurate. Iraq, faced with US air supremacy, resorted to missiles to attack US regional allies, Israel and Saudi Arabia, in 1991 (Fetter 1991, 9). The same also apply with varying degrees to other regional states, where missiles are considered a more accessible way of extending their military reach. Overall conventionally-armed missiles are widely considered as legitimate and acceptable tool for deterrence and also retaliation. In the case of Israel, the utility of missiles is also tied to their ability to act as possible delivery vehicles for its nuclear weapons (Kristensen and Korda 2022).

In addition to the force projection function that missiles play in national defence, they have also acquired symbolic meaning that ascribes additional value to them beyond strict military utility. Missiles are frequently used in military parades and valorised as a key national asset symbolizing technological prowess, autonomy and national strength. In that sense, they sometimes play an important role as symbols and markers of strength and sometimes even defiance in front of a domestic audience but also an external audience (Isreal and Paikowsky 2017; Eslami and Vieira 2020). This ascribes an additional layer of value to missiles that need to be considered when thinking about how to de-value them in the context of arms control. Furthermore, the financial, technological and reputational investment made in missiles can result in the creation of bureaucratic constituencies from scientists, technicians to defence officials who work on missiles and develop interest in entrenching missiles deeper into defence policy potentially resisting efforts for arms control. This is particularly the case with states that have developed an indigenous production infrastructure.

Missile control will also involve a diversity of actors. In addition to state programmes, some regional non-state actors have also developed an interest in missiles with considerable ranges and are demonstrating remarkable capabilities in this domain. Key examples here include Hezbollah in Lebanon and the Houthis in Yemen. Without the capacity to operate an air force similar to national militaries, these groups find value in missiles as a way to reach into population centres or critical infrastructure of their adversaries (Elbahtimy 2022, 7-9). Some groups have also developed some capacity to handle and assemble missile components received from state backers allowing them to bypass the risk of transferring complete systems (Williams and Shaikh 2019, 20). This adds an additional challenge to arms control which need to consider non-state actors alongside state actors.

Adding to these considerations is the fact that norms and international machinery for controlling missiles are much less developed than those addressing other weapons particularly weapons of mass destruction like nuclear, chemical and biological weapons. Multilateral efforts

to control missiles have stayed short of developing binding treaties and instead relied on various informal instruments that restricts supply but remain below the legally binding threshold (Mistry 2002). The lack of a well-developed global control regime complicates regional arms control that has to build up many aspects of a regime rather than drawing on already existing ones.

## Considering options for missile control in the region

The fate of the ACRS working group and discussions within the context of the NPT Review Process and at the UN on the proposal for establishing a WMDFFZ in the Middle East goes to highlight the challenging context for starting arms control in the region. Thinking about a cooperative framework to address the threat of advanced missiles in the region must contend with that complicated legacy as well as the different priorities of regional states on security threats and how to mitigate them. In thinking about the form of a missile control, this section explores three different broad modalities for arms control.

### Option 1: Country-tailored/targeted approach

This approach focuses its arms control measures on a single regional actor whose holdings might be deemed to be of regional or international concern. In doing that, this approach provides a selective way in dealing with regional missiles. It limits its focus to applying restrictions tailored specifically to one country rather than creating direct linkages between missile holdings of various regional countries. An example of this approach would be the nuclear deal with Iran, officially known as the Joint Comprehensive Plan of Action (JCPOA), that established negotiated restrictions on Iran's nuclear capabilities agreed by Iran and other international parties without directly affecting other regional states.

Some of the more recent arms control proposals aimed specifically at addressing Iranian missiles fall into this category (Kheel 2021; Golov and Landau 2018; Einhorn and Van Diepen 2019). These proposals have been driven by an expansion and diversification in Iran's missiles inventory as well as increase in their precision. They are also fuelled by proliferation concerns, particularly to non-state actors, on the back of Iran's links with other proxies and allies in the region. This has led to explorations of the possibility of agreeing some restrictions or constraints on Iran's missile programmes; similar in style to the ones agreed under the nuclear deal. This has also partly come in response to criticism levelled at the Iran nuclear deal for not sufficiently addressing the issue of missiles.<sup>3</sup> One well developed proposal is to take Iran's self-imposed freeze on missile developments of ranges longer than 2000 km and work towards turning that into an explicit joint agreement or obligation (Elleman and Fitzpatrick 2018). To compensate such restrictions, the proposal would allow Iran to continue its space programme including its development of space launch vehicles uninterrupted. More broadly, at present, proposals that

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<sup>3</sup> The Trump administration cited the lack of missile limits as one the three reasons why his administration abandoned the Iran nuclear deal. This issue continues to feature in Republican talking points on the Iran nuclear deal (Taleblu 2017).

follow this approach are concerned with checking Iran's growing missile capabilities. Yet, in principle, the same country-tailored approach can be applied to other regional states.

While a country-tailored approach can be attractive because it limits its focus to one country, it has its challenges. If Iran is taken as an example, the task of getting Iran to agree negotiated limitations on its missiles will be monumental in light of the role these missiles have continued to play in Iran's military strategy in addition to the value they hold in Iranian hearts and minds (Taremi 2003). Also, such a country-specific approach leaves other countries in the region without similar restraints or restrictions on their missile holdings. This will, in part, require a strong external sponsor that can offset some of the sacrifices or concessions made by the country in question and would therefore be unimaginable without dedicated diplomatic engagement from outside the region. Additionally, a 2000 Km limit might alleviate concerns of some states outside the region but remains a high threshold for regional missile control. On the plus side, when such an approach is successful, it can be a stop-gap measure to quickly address advances in one specific missile programme without the complexity involved in adding other regional states.

#### Option 2: Regional-based approach

This approach focuses on developing a regional, rather than a country-specific, solution to the missile situation in the Middle East. It would aspire to reach a negotiated solution between all or key regional states to put in place mutual missile restrictions or restraints. The advantage of this approach, and also one of its key challenges, is that it would create a set of new region-wide rules of acceptable regional behaviour in the sphere of missiles. If successful, it can foster a new regional regime addressing missile threats in the region. It would also involve some quid-pro-quo between regional states that address missiles but might conceivably also address other aspects of regional security. It also allows regional actors to frame their concessions as linked to other reciprocal regional concessions.

The regional dimension of a missile control regime has featured in some proposals including as previously mentioned as part of the Middle East Resolution adopted at the 1995 NPT Review and Extension Conference. Yet this remains one of the least developed aspects of the WMDFZ proposal and hardly features in international or regional discussions on the proposed zone. Elleman (2012) proposed a region-wide ban on the development and the possession of ballistic missiles with ranges exceeding 3,000 Km. This would include Iran, Israel, Turkey and members of the Arab League and can be framed in the context of achieving progress towards the WMD Free Zone in the region but can also be pursued independently. Rather than an outright ban, Erasto and Wezeman (2020, 9) proposed more modest confidence building measures in the missile sphere that can apply regionally and start with Iran and Gulf states.

The challenges here can be obvious, whether taking the formal route of a WMDFZ or a separate regional route, a region-wide solution will have to overcome many of the challenges demonstrated by the experience of ACRS and regional efforts to rid the region from WMDs. The lacking history of regional cooperation, mutual mistrust and wavering political will as well as

differences on how security within the region can be achieved present some of the key challenges in following this route.

### Option 3: International restriction on missiles

Rather than take a country-targeted route or a regional route, this approach follows an international route to indirectly restrict or constrain missile developments in the region. This would entail externally imposed restraints by actors outside the region delivered either through individual state policies or in agreement between a larger number of states. While this might sound grand in nature, in practice, it is the least ambitious among the different modalities available for addressing missile proliferation. It amounts to a continuation of export controls enforced nationally and some constraints agreed among international suppliers about the conditions and nature of missile transfers.

One of the features of missile controls internationally, is the lack of solid international norms especially compared to nuclear, chemical, or biological weapons. The two key instruments, the Missile Technology Control Regime (MTCR) and the Hague Code of Conduct (HCoC), are voluntary measures rather than legally binding ones. While the MTCR focuses on limiting the spread of missiles carrying a 500-kilogram payload at least 300 kilometres, the HCoC provides a wider set of confidence building and transparency measures related to ballistic missiles (Mistry 2003). These regimes can be strengthened and some of the gaps particularly as applied to the Middle East can be addressed. Both instruments make a direct link between the threat of missiles and their use in connection to WMDs. Breaking that link would increase their regional applicability and help address the widespread use of missiles to deliver conventional payloads. The HCoC can also inspire useful confidence building measures among regional states. Encouraging regional uptake can therefore be a welcome step to decrease the destabilizing influence of ballistic missiles.

### Cross cutting themes for missile control

Whatever form such a missiles control exercise might take, there are several cross-cutting themes that such an effort will need to address. First, it needs to consider effective criteria for the missiles to be controlled. For example, should agreed limits focus on range, weight, precision, platform, or a combination of these factors? This is likely going to be one of the most vexing issues on missile control. This is because while these categories have significance on their own, they can also be co-dependent. For example, SCUD-B missiles are capable of delivery a payload of 1 ton for a range of 300 Km but as Iraq showed they could be relatively easily modified to carry lighter load for longer ranges; thus enabling it to reach Iranian population centres in the Iran-Iraq war as well as Israeli and Saudi targets in 1991 (Carus and Bermudez 1990, 205). The MTCR used a combination of range (300 Km) and payload weight (500 kg) to define its restrictions (Arms Control Association n.d).

Second, it would require deciding on the missile activities that are desirable or useful to control. Ideally, this can involve applying some prohibitions on use but there are also other categories

that can be worth exploring how to apply restraint or transparency regimes to. This can include the development of new systems and missile test launches.<sup>4</sup> It can also cover deployments but also transfer of full systems or technologies that can assist with the production of missiles. A comprehensive blanket ban on a range of activities can be an option but also selective bans that cover some activities while allowing others can be another option.

Third, it will also need to address the link between legitimate space programmes and any prohibited missile activities. While it is more common for space programmes to build on advances in military missiles rather than the other way around, addressing that link will be key to ensuring that peaceful activities are not used as cover for military programmes. Many control regimes have made that distinction between allowed activities and prohibited activities. For example, The NPT allowed peaceful nuclear energy applications while prohibiting nuclear weapons acquisition. This is likely to be a key consideration given the growth in global and regional interest in space applications (Tarikhi 2009; Israel and Paikowsky 2017). This will also raise the question of possible hedging behaviour by using allowed activities to build capability that can be useful in the military domain. It also focuses the attention on signatures that distinguish between peaceful uses and prohibited activities in the missiles space (Mistry 2003, 136-138).

Fourth, the problem of regional missiles is not solely linked to their value as delivery platforms for WMDs. In the region they have frequently been used as stand-off conventionally armed attack weapons (Elbahtimy 2022). Following a broader framework can potentially address the surge of recent use in the region of advanced missiles armed with conventional payloads. However, it also raises some conceptual problems about what constitutes legitimate defence needs that can be accepted on a regional scale. Furthermore, global regimes for missile control has so far emphasised the WMD link on the expense of other payloads.

Fifth, given the prominence of non-state actors in regional missile landscape, it is worth developing modalities where proposed controls can be effectively applied to those actors in addition to state actors. Regionally, the issue of proxy wars form a key part of the security landscape. Part of this relates to the organic links including ideological between non-state groups and their state patrons but also such relationships often defy the view that proxies are passive recipients of assistance but also wield power and leverage (Brown 2016; Krieg and Rickli 2019).

Sixth, transparency and verification measures will prove a key component of any such arrangements. As the experience of verifying the destruction of Iraqi missiles under UNSCOM has shown, these tasks can come with their own challenges regarding the level of acceptable access and intrusiveness.

## Conclusion

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<sup>4</sup> To explore the option of flight test ban, see Mistry (2003, 144-145).

Advanced ballistic and cruise missiles have become a salient feature of the Middle Eastern security landscape. More states are either developing indigenous production capabilities or importing these missiles than ever before and their use has also become a frequent occurrence in regional conflicts. Regional competition is fuelling ever more advanced missile acquisitions. Missiles are also frequently celebrated and paraded as symbols of national strength and technological achievement. These dynamics are feeding an expanding regional appetite for developing and acquiring missiles that is likely to continue into the near future. While earlier concerns about missiles closely linked them to WMD ambitions, current regional dynamics point to a more complex picture where the link to WMD exists alongside the potential for their use as conventionally armed stand-off weapons that can evade air defences.

Despite the growing salience of advanced missiles in the Middle East, sought by many governments and non-state actors, discussion about missile control remains surprising minimal and primitive. This is even more striking when considering that the WMDFZ in the Middle East proposal, frequently the focus of multilateral diplomatic efforts, addresses delivery vehicles; which has become a formal part of the proposal since the 1990s. Despite that, missile control remains one of the least developed and discussed elements of the WMDFZ proposal and frequently overlooked by both the policy and research communities. The contrast between a fast-evolving regional missiles landscape and the lack of sufficient consideration of missile restraint risks aggravating regional competition in advanced missiles.

The challenges that face missile control in the region are substantial and require dedicated attention to address. Divergent attitudes towards regional security and the lack of regional history for cooperation has traditionally made progress on regional arms control challenging. When it comes to missiles, any arms control will need to address how missiles have become increasingly ingrained and valued in regional military thinking as force multipliers but also as symbols of power and prestige frequently paraded in front local and international audiences. Dismantling the value system attached to these weapons might prove a key factor in enabling political will and convergence on the need to apply regional missile restraint. Conceptually, three modalities for missiles control exist ranging from country-specific, to region-wide to international in scope. While region-wide approaches are the most challenging as they require transformation in regional security relations, they can be the most enduring and meaningful in changing regional attitudes towards missiles. To develop missile control proposals, regional states will need to develop converging positions on the nature of regional missile threats and also develop acceptable parameters for a missiles restraint regime that draws on international experience and best practices but also go beyond that into considering region-tailored solutions.

#### **Disclosure Statement**

No potential conflict of interest was reported by the author.

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## References

- Aboul-Enein, S. and H. Elbahtimy. 2010. *Towards a verified nuclear weapon free zone in the Middle East*. VERTIC.
- Arms Control Association. n.d. *The Missile Technology Control Regime at a Glance*. <https://www.armscontrol.org/factsheets/mtcr>.
- Bahgat, G. 2019. 'Iran's Ballistic Missile and Space Program: An Assessment', *Middle East Policy* 26(1): 31-48.
- Bar-Yaacov, N. 1980. 'Keeping the peace between Egypt and Israel, 1973–1980', *Israel Law Review* 15(2): 197-268.
- BBC. 2020. 'Iran attack: US troops targeted with ballistic missiles', *BBC*, 8 January 2020. <https://www.bbc.co.uk/news/world-middle-east-51028954>.
- Brookes, P. and J. Phillips, J. 2021. *The Growing Danger of Iran's Missile Programs*. Heritage Foundation Backgrounder 3605.
- Brown, S. 2016. 'Purposes and pitfalls of war by proxy: A systemic analysis', *Small Wars & Insurgencies* 27(2): 243-257.
- Browning, Noah. 2016. 'Houthi missile arsenal holds a key to future Yemen peace', *Reuters*, 22 November 2016. <https://www.reuters.com/article/us-yemen-security-missiles-analysis-idUSKBN13H1UU>.
- Buzan, B. and L. Hansen. 2009. *The evolution of international security studies*. Cambridge University Press.
- Carus, W. Seth. 1991. *Ballistic Missiles in Modern Conflict*. New York: Praeger Publishers.
- Carus, W.S. and J.S. Bermudez. 1990. 'Iraq's al-Husayn missile programme', *Jane's Soviet Intelligence Review* 2(5).
- Chapman, G., H. Elbahtimy and S.B. Martin. 2018. 'The future of chemical weapons: Implications from the Syrian civil war', *Security Studies* 27(4): 704-733.
- Cohen, A. 1998. *Israel and the Bomb*. Columbia University Press.
- Cohen, A. 2011. *The Worst-Kept Secret: Israel's Bargain with the Bomb*. Columbia University Press.
- Corera, Gordon. 2006. *Shopping for bombs: Nuclear proliferation, global insecurity, and the rise and fall of the AQ Khan network*. Oxford University Press.
- Crail, P. 2010. 'NPT Parties Agree on Middle East Meeting', *Arms Control Today* 40(5): 21.
- Crail, P. and M.A. Pomper. 2008. 'The Middle East and Nonproliferation: An Interview with Nabil Fahmy, Egypt's Ambassador to the United States', *Arms Control Today* 38(7). <https://www.armscontrol.org/act/2008-09/iran-nuclear-briefs/middle-east-nonproliferation-interview-nabil-fahmy-egypt%E2%80%99s>.



- Dassa Kaye, D. and F.M. Wehrey. 2007. 'A nuclear Iran: The reactions of neighbours', *Survival* 49(2): 111-128.
- Davenport, K. 2013. 'No Date Set for Middle East Zone Meeting', *Arms Control Today* 43(9): 32.
- Dhanapala, J. 2014. 'The Middle East as a weapons of mass destruction-free zone', *Medicine, Conflict and Survival* 30(sup1): s18-s26.
- Einhorn, Robert and Vann H. Van Diepen. 2019. *Constraining Iran's missile capabilities*. Brookings Institute.
- Eisenstadt, M. 2015. *Missiles and the Nuclear Negotiations with Iran*. The Washington Institute for Near East Policy.
- Eisentein, M. 1982. 'Third World missiles and nuclear proliferation', *The Washington Quarterly* 5(3): 112-115.
- Elbahtimy, H. 2022. *Ballistic and cruise missiles in the Middle East: The current landscape and options for arms control*. IISS Research Paper
- Elleman, Michael. 2012. 'Banning Long-Range Missiles in the Middle East: A First Step for Regional Arms Control', *Arms Control Today*. <https://www.armscontrol.org/act/2012-05/banning-long-range-missiles-middle-east-first-step-regional-arms-control>.
- Elleman, M. 2015. *Iran's Ballistic Missile Program*. Iran Primer.
- Elleman, Michael and Mark Fitzpatrick. 2018. 'How to Strike a Missile Deal With Iran', *Foreign Policy*. <https://foreignpolicy.com/2018/08/06/how-to-strike-a-missile-deal-with-iran-trump-ballistic-nuclear-warheads/>.
- Erasto, Tytti and Pieter Wezeman. 2020. *Addressing Missile Threats In The Middle East And North Africa*. SIPRI Brief.
- Eslami, M. and A.V.G. Vieira. 2020. 'Iran's strategic culture: The "revolutionary" and "moderation" narratives on the ballistic missile programme', *Third World Quarterly* 42(2): 312-328.
- Fahmy, N. 2001. 'Prospects for arms control and proliferation in the Middle East', *The Nonproliferation Review* 8(2): 111-117.
- Feldman, S. 1994. 'The middle east arms control agenda: 1994-95', *The International Spectator* 29(3): 67-82.
- Fetter, Steve. 1991. 'Ballistic Missiles and Weapons of Mass Destruction: What is the threat? What should be done?', *International Security* 16(1).
- Fitzpatrick, M. 2021. 'Israel's ballistic-missile programme: An overview', IISS, 25 August 2021. <https://www.iiss.org/blogs/analysis/2021/08/israel-ballistic-missile-programme>.
- Golov, Avner and Emily B. Landau. 2018. 'Length Doesn't Matter', *Foreign Policy*. <https://foreignpolicy.com/2018/02/12/length-doesnt-matter/>.
- Hylton, J. 2013. 'Middle East Peacekeeping Operations after Peace Accords on the Syria and Lebanon Tracks', *Journal of International Peacekeeping* 17(1-2): 1-45.
- International Institute for Strategic Studies (IISS). 2021. Open-Source Analysis of Iran's Missile and UAV Capabilities and Proliferation.
- International Institute for Strategic Studies (IISS). 2021. Cruise Missiles in the Middle East.
- International Institute for Strategic Studies (IISS). 2007. Nuclear Black Markets: Pakistan, AQ Khan and the Rise of Proliferation Networks: A Net Assessment. IISS.
- International Institute for Strategic Studies (IISS). 2010. *Iran's Ballistic Missile Capabilities: A Net Assessment*. IISS.

- Israel, I.B. and D. Paikowsky. 2017. 'The iron wall logic of Israel's space programme', *Survival* 59(4): 151-166
- Johnson, R. 2010. 'Assessing the 2010 NPT review conference', *Bulletin of the Atomic Scientists* 66(4): 1-10.
- Karp, A. 1988. 'The frantic Third World quest for ballistic missiles', *Bulletin of the Atomic Scientists* 44(5): 14-20.
- Karp, A. 1995. 'Ballistic missiles in the Middle East: Realities, omens and arms control options', *Contemporary Security Policy* 16(1): 111-129.
- Kaye, D.D. 1997. 'Madrid's forgotten forum: The Middle East multilaterals', *Washington Quarterly* 20(1): 167-186.
- Kheel, Rebecca. 2021. '140 lawmakers call for Biden administration to take "comprehensive" approach to Iran', *The Hill*, September 2021. <https://thehill.com/policy/defense/542335-140-lawmakers-call-for-biden-administration-to-take-comprehensive-approach-to>.
- Krieg, A. and J.M. Rickli. 2019. *Surrogate warfare: The transformation of war in the twenty-first century*. Georgetown University Press.
- Kristensen, H.M. and M. Korda. 2022. 'Israeli nuclear weapons, 2021', *Bulletin of the Atomic Scientists* 78(1): 38-50.
- Lewis, Jeffrey. 2014. 'Why Did Saudi Arabia Buy Chinese Missiles?', *Foreign Policy*, 30 January 2014. <https://foreignpolicy.com/2014/01/30/why-did-saudi-arabia-buy-chinese-missiles/>.
- Masterson, J. 2020. 'Middle East WMD-Free Zone Process Moves Slowly', *Arms Control Today* 50(2): 36-37.
- McNaugher, T.L. 1990. 'Ballistic missiles and chemical weapons: The legacy of the Iran-Iraq war', *International Security* 15(2): 5-34.
- Mian, Z. 2021. 'Establishing Nuclear Weapons Obligations for a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction', *Journal for Peace and Nuclear Disarmament* 4(2): 295-308.
- Miller, A.J. 1989. 'Towards Armageddon: The proliferation of unconventional weapons and ballistic missiles in the Middle East', *The Journal of Strategic Studies* 12(4): 387-404.
- Mistry, D. 2002. 'Technological containment: The MTCR and missile proliferation', *Security Studies* 11(3): 91-122.
- Mistry, D. 2003. 'Beyond the MTCR: Building a Comprehensive Regime to Contain Ballistic Missile Proliferation', *International Security* 27(4): 119-149.
- Mukhatzhanova, G. 2014. 'Rough seas ahead: Issues for the 2015 NPT review conference', *Arms Control Today* 44(3): 20.
- Nolan, Janne E. 1991. *Trappings of Power Ballistic Missiles in the Third World*. Washington, DC: The Brookings Institution.
- Nolan, J.E. and A.D. Wheelon. 1990. 'Third World ballistic missiles', *Scientific American* 263(2): 34-41.
- NPT. 2010. The Final Document of the 2000 Review Conference — Conclusions and recommendations for follow-on actions. NPT/CONF.2010/50, Vol. II.
- Phillips, J. and P. Brookes. 2021. *Iran's Nuclear Humpty Dumpty: The JCPOA Should Not Be Put Back Together Again*.
- Pollack, J. 2011. 'Ballistic trajectory: The evolution of North Korea's ballistic missile market', *The Nonproliferation Review* 18(2): 411-429.

- Potter, W.C. and A. Stulberg. 1990. 'The Soviet Union and the spread of ballistic missiles', *Survival* 32(6): 543-557.
- Pregenger, A.L., M. Vannoni, and K.L. Biringer. 1996. *Cooperative monitoring of regional security agreements*. No. SAND-96-1121. Albuquerque, NM: Sandia National Labs.
- Price, R. 2019. 'Syria and the chemical weapons taboo', *Journal of Global Security Studies* 4(1): 37-52.
- Reuters. 2015. 'Israel says 90 pct of Syria's ballistic missiles used up on rebels', *Reuters*, 18 November 2015. <https://www.reuters.com/article/mideast-crisis-syria-missiles/israel-says-90-pct-of-syriasballistic-missiles-used-up-on-rebels-idUSL8N13D4M220151118>.
- Rosenthal, A. 1991. 'Bush Unveils Plan for Arms Control in the Middle East', *New York Times*, 30-05-1991. A-1.
- Russell, R. L. 2001. 'A Saudi nuclear option?', *Survival* 43(2): 69-80.
- Russell, R. L. 2005. *Arab security responses to a nuclear-ready Iran. Getting ready for a nuclear-ready Iran*.
- Sanders-Zakre, A. 2018. 'UN Body Seeks Mideast WMD-Free-Zone Talks', *Arms Control Today* 48(10): 31.
- Segal, D. 1988. 'The Iran-Iraq war: a military analysis', *Foreign Affairs* 66(5): 946-963.
- Seybert, A. 2019. *Nuclear politics in the Mediterranean: Prospects and pitfalls of nuclear weapons programs in Middle Eastern states*.
- Shaikh, Shaan and Ian Williams. 2018. 'Hezbollah's Missiles and Rockets', *CSIS Briefs*, Centre for Strategic and International Studies, 5 July 2018. <https://www.csis.org/analysis/hezbollahs-missiles-and-rockets>.
- Sirrs, Owen L. 2007. *Nasser and the missile age in the Middle East*. Routledge.
- Sonne, Paul. 2019. 'Can Saudi Arabia produce ballistic missiles? Satellite imagery raises suspicions', *Washington Post*, 23 January 2019. [https://www.washingtonpost.com/world/national-security/can-saudi-arabia-produce-ballistic-missiles-satelliteimagery-raises-suspicions/2019/01/23/49e46d8c-1852-11e9-a804-c35766b9f234\\_story.html](https://www.washingtonpost.com/world/national-security/can-saudi-arabia-produce-ballistic-missiles-satelliteimagery-raises-suspicions/2019/01/23/49e46d8c-1852-11e9-a804-c35766b9f234_story.html).
- Taleblu, B.B. 2014. 'Don't Forget Iran's Ballistic Missiles', *War on The Rocks*. <https://warontherocks.com/2014/08/dont-forget-irans-ballistic-missiles/>.
- Taremi, Kamran. 2003. *Ballistic Missiles in Iran's Military Thinking*. Wilson Centre, Oct. 14, 2003. <https://www.wilsoncenter.org/event/ballistic-missiles-irans-military-thinking>.
- Tarikh, P. 2009. 'Iran's space programme: Riding high for peace and pride', *Space Policy* 25(3): 160-173.
- United Nations General Assembly. 2021. Report of Second Session of the Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction. A/CONF.236/2021/4.
- White House. 1991. *Fact Sheet on the Middle East Arms Control Initiative*. 29 May 1991.
- Williams, Ian and Shaan Shaikh. 2019. 'The Missile War in Yemen', CSIS, 9 June 2019. <https://www.csis.org/analysis/missile-war-yemen-1>.