

Ballistic Missile Launchers: A Case Study of Iran (Built for Survival, Not Luxury)

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Undoubtedly, ballistic missile proliferation in the Middle East has been one of the most significant and influential factors shaping the regional balance of power. Among the key players, Iran's ballistic missile program stands out as a central component of Tehran's defense strategy and a symbol of its strategic ambitions. This program has consistently attracted the attention of regional actors engaged in competition with Iran.

Israel, viewed by Tehran as its primary regional rival, has long perceived Iran's ballistic missile capabilities as a serious security threat, both directly and through the missile arsenals of Iran's allied proxy groups.¹ Consequently, the assessment and analysis of Iran's missile arsenal, including its launch systems, have become integral to Israel's strategic calculations.

Recent statements by Israeli officials regarding Iran's missile firepower, especially following the conflict between Iran and Israel in June 2025, which marked one of the most intense confrontations between the two countries, further illustrate this dynamic.² Israel's concentrated efforts to target Iranian missile launchers during this conflict underscore the centrality of ballistic missile capabilities in the ongoing strategic rivalry between the two states.³

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Transporter Erector Launchers and Their Strategic Roles

Transporter erector launchers (TELs) are vital components of ballistic missile arsenals because they provide mobility, flexibility, and survivability for missile forces.⁴ Unlike fixed silos, TELs can move and operate from various locations, making them harder to detect and destroy and thereby ensuring a reliable second-strike capability.⁵ During the Cold War, both the United States and the Soviet Union understood that the number of launchers directly influenced the strategic balance, leading to several major arms control agreements—Strategic Arms Limitations Talks (SALT) I (1972), SALT II (1979), Strategic Arms Reduction Treaty I (1991), START II (1993), and New START (2010)—that aimed to limit the quantity of strategic missile launchers as well as warheads.⁶ These treaties reflected a mutual recognition that controlling launch systems was as crucial as controlling the missiles. While the quantity of missiles determines overall firepower, the number and type of launchers, whether mobile TELs, silos, submarines, or bombers, are equally important in defining a nation's deterrence posture and maintaining strategic stability.

The June 2025 Conflict and Israel's Point of View

In June 2025, a sharp escalation between Iran and Israel resulted in a brief but intense confrontation widely referred to as the “Twelve-Day War.” The conflict began with a wave of Israeli strikes against Iranian military infrastructure, followed by Iranian ballistic missile and drone attacks targeting Israeli territory. Throughout the fighting, Israel’s strategy placed a strong emphasis on neutralizing Iran’s ballistic missile launch capabilities, including both fixed launch sites and mobile TELs that form the backbone of Iran’s missile force.⁷

Israeli prime minister Benjamin Netanyahu and the Israel Defense Forces publicly announced that a major focus of the campaign was the systematic destruction of Iran’s launchers before they could be used. During the course of the 12 days, Netanyahu declared that Israel had destroyed more than one-half of Iran’s missile launchers, and military officials later estimated that roughly two-thirds of Iran’s launchers had been neutralized.⁸ This represented a major degradation of Iran’s missile force, as the loss of TELs and launch platforms significantly reduced its ability to carry out coordinated ballistic missile attacks.

Israeli defense statements following the ceasefire claimed that these operations substantially weakened Iran’s ballistic missile firepower, with the destruction of launchers limiting Iran’s ability to deploy and launch its remaining missiles effectively. Netanyahu described the campaign as a “historic success,” asserting that Israel had destroyed many of Iran’s launchers.⁹

Ultimately, the 12-day conflict highlighted the strategic importance of launchers—particularly TELs—in modern missile warfare. Israel’s efforts demonstrated that targeting an adversary’s launch systems can have a decisive impact, reducing not only the number of active missiles but also the capacity to use them effectively. Consequently, the conflict reinforced a central principle of strategic balance: the destruction of launchers can be as crippling as the loss of missiles themselves.

Iran’s Ballistic Missile Arsenal, Born and Shaped by Constraints

Iran’s ballistic missile program traces its operational beginnings to the Iran–Iraq War (1980–88), when mis-

sile strikes, often called the “war of the cities,” became a prominent feature of the conflict. After the war, and especially as Iran faced limits in modernizing its air force fleet (e.g., procurement restrictions, arms embargoes, and high costs), Tehran directed a disproportionate share of its strategic investment into ballistic missiles as a relatively affordable way to project deterrent power and area denial capabilities.¹⁰

A defining characteristic of Iran’s program is that it grew under persistent constraints. Senior Iranian military figures, including former commanders of the Islamic Revolution Guard Corps Aerospace Force, and other officials have repeatedly pointed to financial shortfalls, international sanctions, and industrial bottlenecks as continual limits on research, development, procurement, and sustainment.¹¹ Rather than being an incidental detail, those constraints shaped doctrine, design choices, and force structure: Iranian decision makers prioritized localization, low cost, and pragmatic use of available technologies.

In practice, this meant designing systems that could be produced domestically where possible, optimizing for simplicity and robustness, and adapting nonmilitary or dual-use components to stretch scarce resources. That frugal, improvised approach is highly visible in Iran’s launcher practices. TELs and other launcher solutions were often built around commercially available truck chassis, heavy-duty carriers, and civilian trailer platforms that are widespread in the market, easy to modify for military use, and inexpensive compared with bespoke military vehicles.

Using commercial platforms reduced development time, lowered procurement costs, and increased the ability to disperse and hide launchers among civilian traffic and infrastructure. This same logic to maximize localization, minimize cost, and exploit available options also shows up in recently unveiled missile sites and launcher displays, where adaptations of civilian logistics vehicles and modular, transportable launch arrangements are evident.

Additionally, the modular design allows the production and acquisition of each component from different manufacturing sites, preventing the entire system from being concentrated in a single location. As a result, if one site is destroyed, others remain operational. It also

enables faster repairs and replacements, as only the damaged or worn part needs to be fixed or replaced. By spreading out production and allowing for modular replacements, the system becomes more resilient to attack and operational disruption.

In short, Iran's ballistic capability was not born from abundant resources but from strategic necessity. Constrained budgets, sanctions, and limited access to foreign hardware pushed Iranian engineers and planners toward affordable, locally producible, and easily fielded solutions. TELs were therefore designed and acquired not only to increase mobility and survivability but also to conform to the economic and industrial reality that guided Iran's missile program from its earliest days.

Current Status of Iran's Missile Program after the June 2025 Conflict

Following the Twelve-Day War, several open-source reports and regional assessments indicate that Iran's missile program continues to expand despite United Nations (UN) restrictions. While Israeli strikes targeted a large number of Iranian launchers, Iran's broader missile infrastructure—production facilities, dispersed storage, underground complexes, and mobile deployment practices—remains active and in some areas has accelerated.¹²

Iranian officials have stated publicly that the conflict demonstrated the importance of increasing both the number and survivability of their missile systems. According to regional intelligence estimates, Iran has continued to produce short- and medium-range ballistic missiles, especially solid-fuel types such as the Fateh-110, Zolfaghar, and Dezful families. These systems require less preparation time and are easier to hide or move than older liquid-fuel systems.¹³ Iran is also working to improve accuracy through better guidance units and more modern navigation systems. Although these upgrades are incremental, they add up over time and make Iran's missile force more effective.

Another visible trend is Iran's ability to rearm and rebuild its ballistic missile program with help from Russia and China. According to unnamed European intelligence sources, several shipments of precursors of solid propellant, which are used in Iran's midrange missiles, were shipped from China despite the reimposition of

UN sanctions in late September 2025.¹⁴ From a strategic point of view, Iran is not chasing dramatic technological breakthroughs. Instead, it focuses on producing large numbers of reliable missiles that can be launched in salvos to complicate the missile defenses of Israel and the Arab states in the Persian Gulf region. The logic is simple: even if Israel destroys many launchers, Iran can still generate meaningful missile firepower through its remaining units. This "mass-and-survivability" approach aligns with Iran's longstanding doctrine shaped by constraints, as described earlier in this paper.

In short, Iran has come out of the Twelve-Day War with a larger and more dispersed missile force than many expected. While Israel inflicted serious damage on Iran's launch systems, the underlying industrial capacity that supports Iran's missile program remains intact. For this reason, the conflict did not slow the overall direction of Iran's missile development. Instead, it reinforced Iran's belief that missiles remain the most reliable tool for deterrence and strategic signaling, especially in an environment where modern aircraft procurement is extremely difficult.

Conclusion

Iran's ballistic missile arsenal—and specifically its TELs—rests on a foundation of low-cost design, localized production, and adaptability. These launchers are not complex, high-value assets that are dependent on foreign components or limited production lines; rather, they are largely constructed from commercial heavy truck and trailer platforms that are readily available within Iran's domestic market. The country's longstanding policy of self-reliance and industrial localization, developed in response to decades of sanctions, has resulted in a broad industrial capacity capable of manufacturing or modifying large numbers of such vehicles on short notice.

Therefore, assuming that targeting TELs during a conflict would permanently or even significantly diminish Iran's missile-launch capacity is a miscalculation. While strikes can temporarily degrade operational readiness, the potential for replenishment and reconstruction of these systems is high due to their simple, cost-effective, and domestically sourced nature. Iran's heavy truck industry, together with its experience in

dual-use manufacturing and covert underground production facilities, provides the flexibility to rapidly replace or repurpose civilian vehicles into military launchers even under wartime conditions.

The events of the June 2025 conflict demonstrated this resilience. Although Israel claimed to have destroyed a substantial portion of Iran's launchers, Iran's underlying industrial and technical capability to rebuild such systems remained intact. Consequently, any strategic calculation that relies solely on the assumption that destroying a large number of TELs will decisively weaken Iran's ballistic missile power is far from reality. The localized, low-cost, and easily reproducible nature of Iran's launcher infrastructure ensures that its ballistic missile force remains a sustainable and recoverable component of its national defense posture, even in the face of sustained targeting campaigns.

ENDNOTES

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Editor's Note:

Dr. Christopher Anzalone has concluded his tenure with *MCU Insights* following a change of assignment. He began coediting—and at times contributing to—the journal with Volume 12, Issue 1 (February 2021). His intellectual rigor, steady counsel, and steadfast dedication have been invaluable to the quality and continuity of this publication. I will greatly miss Dr. Anzalone's partnership, and I look forward to welcoming his future contributions to *Insights* whenever his schedule permits.