

## The fallibility of Iron Dome missile defense

The operational capabilities of Israel's missile systems have not been proven and relying on them in a war would be a grave error.

By Reuven Pedatzur, Haaretz  
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Is Iron Dome based on a flawed concept, waiting to fail?

A recent article by aeronautics expert Nathan Farber sheds much doubt on official IDF figures regarding Iron Dome's success rate and the feasibility of missile-based anti-missile defense.

Nathan Farber is not the sworn enemy of anti-missile defense systems. To the contrary, he is part and parcel of the defense establishment. He is a lecturer in aeronautics at the Technion Institute of Technology and served in the past as the chief scientist of the Rocket Systems Division of Israel Military Industries. There is no doubt that he knows a thing or two on the topic of defending against rockets and missiles. Yet, in recent days Farber published a comprehensive article in which he openly challenged the notion of anti-missile and anti-rocket defense adopted by the defense establishment.

Farber's analysis shows that the current policy based on defensive missiles (Arrow 2, Arrow 3, David's Sling, Patriot and Iron Dome) is fundamentally flawed, likely to fail miserably when put to the test, carries an unreasonable price tag and instills the illusion that the Israeli home front is protected from missile attacks.

"On the topic of ballistic missile interception, there is no significant data," he says. "They may have conducted some real interception trials for the Arrow-2, but half of them were failures. The faults were identified and corrected, but since more trials could not be conducted (due to financial considerations), it's clear that a lot of malfunctions will be discovered only during a real war."

In his summary of the operational analysis, Farber states that we are in a situation where the Arrow-3 does not exist (and will not be operational in the near future) and where nobody knows the capabilities of the Arrow-2, not even against the old Scuds. The situation is even more ambiguous with respect to David's Sling, which is still under development.

Very little positive can be said with respect to the Patriot missile. It is enough simply to remind people of this missile's glorious history, racked up during the First Gulf War. In summing up this chapter, Farber writes decisively, "Today Israel has no defense against ballistic missiles and [such a defense's] effectiveness is in doubt for the foreseeable future."

Farber raises doubt regarding IDF claims of success with the Iron Dome anti-rocket batteries during Operation Pillar of Defense last year (with interception rates of close to 90%.) According to his calculations, less than half the incoming rockets reported by the IDF actually reached populated areas (according to the IDF, it engaged 479 rockets in interception attempts.) At the same time, he says that the number of incoming rockets that successfully hit their targets (i.e. that Iron Dome failed to intercept) was more than double the 58 reported by the IDF. This lead Farber to call the IDF's claim of a 90% successful interception rate "exaggerated," at best. He adds, "Iron Dome does not save lives. What saves lives are bomb shelters and safe rooms." Farber says that 90% of Israeli casualties during the Second Lebanon War were outside of a bomb shelter when they were wounded and the rates were similar during Operation Cast Lead in 2009 and Operation Pillar of Defense in 2012.

With respect to the Defense Ministry's war projections, he found that the cost of dealing with the expected threat of rocket and missile fire with anti-missile defense systems would reach more than NIS 35 billion. "It's clear that immediately following such a confrontation, ammunition stores would be depleted and Israel would have to invest a similar sum in replenishing them," he says. "It

appears that no one believes this nonsense, otherwise we would not find ourselves in a situation where the current quantities [of ammunition] are far from that required.” In practice, Farber, says, if a war breaks out, the IDF will go through its entire defensive missile stock within a handful of days.

He recommends seriously examining an alternative laser-based defense system called Skyguard and integrating it into service with the existing defense systems. In any event, Farber concludes, “Total reliance on missile defense systems that have not once proven their operational capabilities in a serious conflict (because there was none) is a grave error.”

The article on Haaretz website: <http://www.haaretz.com/mobile/.premium-1.557145>