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Conflict in Gaza: Another Case for Directed Energy Defenses

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Since 2001, Hamas has fired over 10,000 rockets and mortar rounds at Israel. Last week, to protect its citizens from these indiscriminate attacks, the Israeli launched extensive military operations to root out the Hamas launching sites and military stores. These events have resulted in a destructive, protracted conflict. If Israel had an effective way to shoot down the incoming rockets and mortars, it might have felt less obligated to take extensive measures in defense of its citizens and territory. Likewise, Hamas would have seen the value of its military force greatly diminished.

Directed-energy weapons (such as lasers) provide a proven capacity to interdict rockets, artillery, and mortars. Together the United States and Israel have the technologies necessary to field these weapons. Fielding defenses now would lessen the potential for future armed conflicts. The Pentagon should aggressively press forward in deploying prototype systems that can protect populations and devalue and deter threats such as those posed by Hamas.

War Again! Since violently seizing power in Gaza two years ago, Hamas has escalated its confrontation with Israel by building more sophisticated military infrastructure, smuggling in longer-range Katyusha-style rockets (similar to those used by Hezbollah during its border war with Israel in 2006), and routinely violating a truce negotiated in June 2008. Israeli officials estimated that 12 percent of their population—over 800,000 civilians—were in range of indiscriminate Hamas rocket or mortar attacks. In response, last week Israel felt compelled to undertake military operations to significantly degrade the threat posed by the Hamas weapons.

Israel's military response was necessary, appropriate, and focused specifically on Hamas military capabilities as well as associated personnel and facilities used in planning and conducting attacks on Israeli civilians. Despite cautions taken to limit damage, civilian casualties were inevitable. Gaza is a densely populated area not much bigger than a mid-sized American city, and Hamas has interwoven its political and military infrastructure throughout the city and surrounding villages. The Israeli military response, however, was prompted in part by the lack of any other practical alternative to deal with the rocket threat.

Defenses Wanting. For years the United States and Israel have been testing directed-energy defenses capable of shooting down short range rockets, artillery shells, and mortar rounds in mid-air before they could strike their targets. Two such systems have undergone research and evaluation: chemical lasers and solid-state, adapting commercial lasers. Chemical lasers are a proven 30-year-old technology, though the systems required to generate power for the laser are bulky, complicated, and not terribly

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mobile. More recently, the U.S. has tested military applications for solid-state, adapting commercial lasers for battlefield use. Currently, these solid-state lasers are effective only at low power. Both technologies, however, are mature enough that prototypes could be fielded in short order and would be effective in providing static defenses of areas such as population centers. In addition, the current generation of potential directed energy defenses:

- Come with an almost infinite magazine—as long as the weapons have power, they can be recharged and fired again;
- Can be aimed effectively using existing target acquisition systems (such as radars and optics like night-vision goggles); and
- Can be employed with a minimum of risk toward surrounding civilians, buildings, or vehicles (such as aircraft, cars, and ships).

The Pentagon, however, has been agonizingly slow in fielding operational prototypes. This must change. There are real-world missions, such as the defense of Israeli population centers, for which laser weapons are needed right now. Additionally, fielding prototypes is essential for developing the appropriate tactics, techniques, and procedures for employing these new capabilities. Unless the military gets these new technologies in the field, it is doubtful the full potential of such weapons will ever be realized. Additionally, further delays make it unlikely that a constituency will develop within the military to strongly advocate for developing and fielding directed-energy weapons.

Opportunity for New Administration. The new Administration has opportunity to introduce a "game changer" in the current Middle East conflict by helping speed the fielding of prototype defenses that can devalue the threat of terrorist missile and artillery arsenals. The Department of Defense should stand up a task force to spearhead the acquisition and deployment of operational prototypes for use by all the military services as well as friendly and allied nations such as Israel. Congress should fully fund this effort. Building these new weapons may be one of the most powerful contributions to peace in the Middle East that the United States could make in the near future.

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