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U.S.–India Strategic Partnership on Laser-Based Missile Defense

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Last week, the *Press Trust of India* reported that defense officials intend to produce a laser capable of shooting down enemy ballistic missiles. The United States is a global leader in directed-energy defenses, including both low and high-powered lasers. American military research is also highly advanced in the technologies of acquiring targets as well as the command, control, and battle management systems necessary to identify and direct weapons to destroy missiles and other targets. In recent years, the United States and India have increased bilateral cooperation in a range of defense, counterterrorism, and homeland security areas. This cooperation is helping increase trust and confidence between the two nations while fostering security, stability, and prosperity in Asia. Working together on directed-energy developments offers a significant opportunity to strengthen the U.S.–India strategic partnership.

India Goes to Light Speed. The United States and India share many security concerns, such as the threat of ballistic missiles. V. K. Saraswat of the Defense Research and Development Organization rightly told the *Press Times of India*: “If you have a laser-based system on an airborne or seaborne platform, it can travel at the speed of light and in a few seconds, [and] we can kill a ballistic missile coming towards [India].” India’s interest in developing directed energy defenses is understandable, as lasers have several distinct advantages. Such weapons:

- Can use a high-powered beam of energy to disable electrical components or detonate explosives, rendering the attack means such as the warhead or body of a missile useless;

- 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 command and control systems (such as a computer battle management network); and
- Can be employed with a minimum of risk toward surrounding civilians, buildings, or vehicles (such as aircraft, cars, and ships).

In addition, lasers are versatile. While high-powered lasers address ballistic missile threats, low-powered lasers have a number of potential security uses, from disabling small boats to downing shoulder-fired missiles to intercepting rockets and mortars. All these uses have application to Indian security concerns.

It is also worth noting that missile defenses, such as high-powered lasers, limit the potential for regional conflict. Missile defenses serve as important deterrents, undermining the effectiveness of enemy threats. They also provide an alternative to massive retaliation in the face of an actual attack. The security provided by missile defenses actually limits the likelihood of armed escalation or an arms

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race and makes diplomacy more effective. It is no coincidence that the greatest strides in reducing the nuclear arsenals came in the late 1980s, at the same time the U.S. was pursuing the Strategic Defense Initiative. A world with effective missile defenses is safer and more stable.

American Arsenal. The United States has significant research and development capabilities regarding the application of lasers for national security uses. The Tactical High-Energy Laser (THEL) is one such experimental system tested by the U.S. Army. Development of the THEL began in 1996 as a joint program between the United States and Israel to develop a laser system capable of shooting down Katyusha rockets, artillery, and mortar shells. The THEL system uses radar to detect and track incoming targets. This information is then transferred to an optical tracking system, which refines the target tracking and positions the beam director. The deuterium fluoride chemical laser then fires, hitting the rocket or shell and causing it to explode far short of its intended target. More recently, the Army has experimented with low-power commercial solid-state lasers.

Another system under development in the United States is the Airborne Laser (ABL). The ABL

is a system that uses a megawatt chemical laser mounted on a modified Boeing 747 to shoot down theater ballistic missiles. The megawatt-class laser was first successfully tested at full power in early 2006. The system is still under development.

A Shared Security Interest. The American record of military laser research and its many cooperative ventures with friendly and allied powers suggests that a joint U.S.–Indian directed energy program is certainly achievable. The shared interests of both nations in promoting security and stability in Asia also indicates they have a common cause in developing military technologies that would lessen the potential for conflict while effectively countering terrorism. The U.S. should explore opportunities for joint development of cutting edge directed energy technologies—lasers—with India as part of overall missile defense dialogue and deepening of military-to-military ties.

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