

Directed-Energy Weapons (DEWs)

Prelims: Current events of national and international importance | Defence

Why in News?

Recently, the DRDO is transitioning its indigenous 30 kW-class laser-based Directed-Energy Weapon (DEW) from the trial phase to production.

India's 30 kW Laser System



SHANKAR
IAS PARLIAMENT

Directed-Energy Weapon (DEW)



	Basic principle	Uses concentrated energy rather than conventional ammunition.
	Example	High-energy laser.
	Speed of engagement	Laser travels at speed of light .
	Ammunition requirement	No conventional missile/projectile required.
	Major requirement	Adequate electrical power .



Main application

Countering **drones, UAVs, sensors** and other **aerial targets**.

- **Platform** - Mounted on a truck chassis.
- **Power Output** - 30 kW class.
- **Intended Targets**
 - Drone swarms
 - Fixed-wing unmanned aerial vehicles (UAVs)
 - Surveillance sensors
- **Effective Range** - Up to 5 kilometers.
- **Status** - Technology successfully demonstrated following final trials.
- **Next Step** - Transition to production in collaboration with an industry partner.
- **Advantages**

- Laser systems enable engagement of low-cost drones without incurring conventional interceptor expenditures.
- It provides near-instantaneous target engagement.
- After initial deployment, the cost per shot is potentially very low.
- There is no requirement for conventional ammunition storage.
- These are suitable for countering drone swarms.
- It can provide repeated engagements, provided that adequate power is available.

Conventional Challenge - *High-cost interceptor missiles are often deployed against relatively inexpensive drones.*

India's Laser (DEW) Systems – Status and Industry Involvement			SHANKAR IAS PARLIAMENT
Laser system	Status / capability	Industry involvement	
2 kW DEW 	Already in production	Adani, Astra & BEL	
10 kW DEW 	Acceptance of Necessity cleared; 10–12 systems ordered	L&T & BEL	
30 kW DEW 	Trials completed; production phase being pursued	Industry partner to be identified	
50 kW & 100 kW class DEW 	Under development	DRDO	

Mission Sudarshan Chakra

- The 30kW directed-energy weapon (DEW) is a component of India's comprehensive initiative to establish a **layered air-defence architecture**.
 - Directed-energy weapons are designed to complement existing air-defence systems rather than serve as their replacements.
- A layered air-defence system consists of **multiple integrated components**. These components include missiles, guns, electronic warfare systems, and directed-energy weapons.*

Distinction Between Directed-Energy Weapons and Electronic Warfare

- A **directed-energy weapon (DEW)** physically damages or disables a target by employing concentrated energy, such as a **laser beam**.
- **Electronic warfare** utilizes the **electromagnetic spectrum** to detect, disrupt, deceive, or deny the operation of an adversary's electronic systems.

Global **DEW** Developments



Country		Example
 USA		Laser-based counter-drone systems
 Israel		Iron Beam – 100 kW-class laser system
 China		Silent Hunter, LY-1
 Russia		Developing DEW technologies
 India		DRDO 2 kW, 10 kW, 30 kW and higher-power systems

Reference

[TOI | Directed-Energy Weapons \(DEWs\)](#)