

## India's Nuclear Arsenal recently went up the Sophistication Curve

### Why in news?

In the final months of 2021, India conducted two major missile tests - the Shaurya hypersonic weapon test and the Agni-P missile test.

### What is the Shaurya hypersonic weapon?

- It is a surface-to-surface, medium range, **nuclear capable hypersonic** missile that can reach speeds of **7.5 Mach**.
- It is indigenously developed by Defence Research and Development Organisation (DRDO) under the project code-named **B-05**.
- It is a *land variant of short range Submarine Launched Ballistic Missiles K-15 Sagarika*.
- The newer version of the missile has a strike range of **750 km to 1800 km** depending on the payload.
- It can be used by both the Navy and the Army.
- Shaurya is a **canister-based system**, which means that it is stored and operated from specially designed compartments.
- This is a two-stage missile that uses solid propellants and can deceive enemy radars after launch.
- The missile is less vulnerable to anti-ballistic missile defence systems due to its high manoeuvrability.
- Only the United States, Russia and China have developed technologies to field fast-maneuvring hypersonic missiles that fly at lower altitudes and are extremely hard to track and intercept.

### What is Agni-P?

- Agni Prime (Agni P) is the first of the new generation advanced variant of Agni class of missiles.
- Agni-P is a two-stage **canisterised** solid propellant ballistic missile that can be launched from rail and road and stored for a longer period.
- This **nuclear ballistic missile**, which has a range capability between **1,000 and 2,000 kilometres**, weighs half of Agni III and has new kinds of propulsion and new guidance.
- Since it is a canisterised missile, it reduces the time required to launch the missile while improving its storage and mobility.
- It also comes with the technologies found in the 4000-kilometre range Agni-IV and 5000-kilometre range Agni-V.
- Due to its long range, this missile can be used to target enemy armadas in the Indo-Pacific.

*Agni-V, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km, had been tested several times and validated for induction.*

## What is the significance of these missile tests?

- **Strategic stability** - These missile tests indicate that India is on course to fielding a more sophisticated nuclear arsenal with greater diversity of delivery systems.
- These missile developments might mean for strategic stability, especially between India and Pakistan.
- **Hypersonic weapons**- Shaurya is likely to be highly effective in taking out enemy early radars, static military installations such as airbases and command and control (C&C) facilities.
- **Nuclear deterrence**- The Agni-P missile is capable of delivering multiple independent re-entry vehicles (MIRVs) or multiple warheads against a single target creating an opportunity for India to strengthen nuclear deterrence.
- **Shift in India's no-first-use policy**- Several analysts have inferred that Agni-P and Shaurya together represent a shift in India's no-first-use policy although officially there is no evidence.
- **Canisterization of missiles**- It also means that the canisterization of missiles is not only for longer range missiles such as intermediate range ballistic missiles (IRBMs), but also for the Agni-P, which is a short-range ballistic missile (SRBM).
- Canisterized missile capabilities give India counter-force strike options, especially against Pakistan.
- **Readiness to tackle adversaries**- India's pursuit of higher readiness levels in the form of Agni-P and Shaurya is only a justifiable insurance against a risk-prone adversaries such as China and Pakistan.
- Beijing has deployed its **Dong-Feng (DF)-26 IRBMs** in the Xinjiang region of Western China and India's Shaurya hypersonic weapon is equally a response to it.

### References

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