



## S-400 Missile and Project Kusha

**For Prelims:** [Indian Air Force \(IAF\)](#), [S-400 Triumf Missiles System](#), Project Kusha

**For Mains:** Indigenization of Technology, Significance of India's procurement of the S-400 missile system.

**Source:** [LM](#)

### Why in News?

The [Indian Air Force \(IAF\)](#) to strengthen its defence capabilities has deployed three [S-400 Triumf air defence missile squadrons](#) along the **borders with China and Pakistan**.

- India in 2018-19 signed a contract with **Russia for five S-400 missile squadrons**. Three have arrived, and the remaining two are delayed due to [Russia-Ukraine conflict](#).
- In another development, the [Indian Defence Acquisition Council](#) recently cleared the procurement of the **Indian Long Range Surface Air Missile(LRSAM) system** under **Project Kusha**.

### What is the S-400 Triumf Missiles System?

- **About:**
  - The S-400 Triumf is a mobile, **surface-to-air missile (SAM)** system developed by **Russia**, capable of intercepting and destroying various aerial targets, such as aircraft, drones, cruise missiles, and ballistic missiles.
  - The S-400 has a range of up to **400 km**, at an altitude of up to 30 km and can engage up to **36 targets simultaneously**, with four different types of missiles.
    - It is the most dangerous operationally deployed **modern long-range SAM (MLR SAM)** in the world, considered much ahead of the **US-developed [Terminal High Altitude Area Defense system \(THAAD\)](#)**.

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# S-400 SURFACE-TO-AIR MISSILE SYSTEM



**S-400 TRIUMF (SA-21 Growler)**

Maximum detection range	600km
Maximum altitude	30km
Maximum target speed	4.8km/sec
Targets engaged simultaneously	Up to 36

## Missile ranges

**9M96:** 120km

**48N6:** 250km

**40N6:** 400km

## Fire control radar



Mobile command post



**Launcher:** Equipped with four missile canisters. Up to eight launchers in S-400 battery



Each canister holds four short-range missiles or one longer range missile



- Can shoot down up to 80 target simultaneously
- Cannot yet accurately target low-flying aircraft and missiles (altitude below 30,000 ft) at great distances

## ▪ Importance for India:

- India decided to procure the S-400 missiles to enhance its **air defence capabilities and deterrence posture** against **China and Pakistan**, which have been modernizing and expanding their air forces and missile arsenals.
  - India faces a **two-front threat from China and Pakistan**, which have been involved in several border disputes and conflicts with India over the years.
- India's acquisition is crucial to counter the growing presence and **influence of China in the Indian Ocean Region**, where China has been building ports, bases, and infrastructure projects.
  - India also wants to maintain its strategic autonomy and diversify its defence partners, amid the uncertainty and volatility of the global order.

## What is Project Kusha?

- Project Kusha led by the [Defence Research and Development Organisation \(DRDO\)](#) is an ambitious defence initiative by India aimed at developing its **long-range air defence system by 2028-29**.
  - Long-range air defence systems will be capable of detecting and destroying enemy projectiles and armour, including cruise missiles, stealth fighter jets, and drones at long range.
  - It will consist of **three types of interceptor missiles**, with ranges of 150 km, 250 km, and 350 km, and advanced long-range surveillance and fire control radars.
- Project Kusha is expected to rival the effectiveness of the **renowned S-400 system of Russia and the [Iron Dome system of Israel](#)**.

## Iron Dome System of Israel

- It is a **ground-to-air defence system** that comprises radar and interceptor missiles that are capable of tracking and neutralising any rockets or missiles fired towards targets in Israel.
- It was developed by the state-run **Rafael Advanced Defense Systems and Israel Aerospace Industries** and was deployed in 2011.
- It is particularly useful in defending against rockets, artillery and mortars, as well as aircraft, helicopters and [unmanned aerial vehicles \(UAVs\)](#).
- The Dome has a range of close to 70 km and has three crucial components, Detection and Tracking radar, Battle Management and Weapons Control and the Missile Launcher.

## UPSC Civil Services Examination Previous Year Question (PYQ)

**Q1. What is “Terminal High Altitude Area Defense (THAAD)”, sometimes seen in the news? (2018)**

- (a) An Israeli radar system
- (b) India’s indigenous anti-missile programme
- (c) An American anti-missile system
- (d) A defence collaboration between Japan and South Korea.

**Ans: (c)**

**Q2. With reference to Agni-IV Missile, which of the following statements is/are correct? (2014)**

1. It is a surface-to-surface missile.
2. It is fuelled by liquid propellant only.
3. It can deliver one-tonne nuclear warheads about 7500 km away.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Ans: (a)**

- Agni-IV is a nuclear-capable long-range ballistic missile of India, with a strike range of 4,000 km.
- The indigenously developed Agni-IV is a two-stage surface-to-surface missile. It is 20 metres long with a weight of 17 tonnes. Hence, statement 1 is correct.
- It is a two stage solid fuelled system that can carry a one-tonne nuclear warhead over a distance of 4,000 kilometres. Hence, statements 2 and 3 are not correct.
- Therefore, option (a) is the correct answer.

## **Mains**

**Q.** What is the significance of Indo-US defence deals over Indo-Russian defence deals? Discuss with reference to stability in the Indo-Pacific region. **(2020)**

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