

# India's submarine programme

Faced with the increasing age of its submarine fleet, the Indian Navy is building four nuclear-powered ballistic missile submarines (SSBN) and six Scorpène-class diesel-electric hunter-killer boats (SSK)

■ **1990s:** India's **Advanced Technology Vessel (ATV)** project to build fleet of nuclear-powered submarines takes shape



**K-4 missile\***

Length: 10m

Diameter: 1.5m

Weight: 20 tonnes

Warhead: 2.5 tonnes

**K-15 Sagarika:**

Nuclear-capable cruise missile

\*Approximate specifications



■ **Jul 2009:** **INS Arihant**, first SSBN built under ATV project, launched

■ **Aug 2013:** Reactor on board INS Arihant goes critical

■ **Aug 2016:** INS Arihant commissioned by Prime Minister **Narendra Modi**

■ **Nov 2017:** **INS Arighat**, second SSBN launched, undergoing sea trials

■ **Nov 2018:** INS Arihant conducts first patrol. **India's air, land and sea "nuclear triad" is now operational**

**INS Arihant**

First of five ballistic missile submarines to be built by India

Length: 111m

Crew: 95

Six 533mm

torpedo tubes

**Propulsion**

85MW nuclear reactor.

Submerged speed: **24 knots**

**Armament:** Four vertical launch

tubes can carry four K-4 or 12 K-15 missiles (three per tube)

■ **Oct 2005:** Contract signed for **Project 75(I)**.

Six SSKs to be built by Mumbai-based Mazagon Dock Shipbuilders Limited and partner, France's Naval Group

**INS Kalvari**

Length: 63.5m

Crew: 32

Six torpedo tubes

**Propulsion**

Two diesel-electric engines. Submerged speed: **20 knots**

■ **Oct 2015-May 2019:** Four SSKs launched. **INS Kalvari** commissioned in December 2017. **INS Khandar**, **INS Karanj** and **INS Vela** undergoing sea trials