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Issue Brief

India and the Scorpene Club

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S*ummary*

India, Brazil and Malaysia operate the French-origin Scorpene submarine. Indonesia's recent decision to acquire two of these submarines expands the scope of collaboration among these nations as regards their maintenance, which requires a very high level of industrial infrastructure and skilled workforce. India is the largest operator of these submarines and can play a central role in this technical cooperation. The materialisation of this collaboration opens up a range of opportunities for India to deepen its defence cooperation with strategic partners and strengthen its domestic defence industrial base.

On 28 March 2024, Indonesia signed a contract with the French Naval Group for the purchase of two Scorpene submarines. This made Indonesia the fifth nation to opt for this class of submarines, with the other nations being India, Brazil, Malaysia and Chile.¹ Apart from the order from Indonesia, there are a total of 14 scorpene submarines that are in operational service or under construction. This includes the six units of India, four of Brazil and two each for Malaysia and Chile.

This demonstrates the wide popularity of this French-origin submarine in the export market as a capable undersea platform. It must be noted that all these nations have selected this class of submarines through a competitive bidding process which also involved a rigorous evaluation process. Their selection has been attributed to the Scorpene being an advanced and versatile undersea platform. Also, it is being widely reported that the Philippines is also likely to place an order for two of these submarines very soon.²

In this context, the idea of forming ‘Scorpene Club’ for the nations that operate these submarines has been under discussion for nearly a decade.³ The rationale behind setting up such a club is to enable the Scorpene operators to collaborate for making the optimal utilisation of this undersea platform. In recent years, Brazilian and Malaysian delegations have visited India for exploring avenues for collaboration in submarine maintenance, procurement of spares, technological upgrades and sharing of expertise.⁴ India being the largest operator of this submarine has an opportunity to assume a leading role in establishing such an arrangement and deepen defence cooperation with its strategic partners.

The Platform and its Operators

The Scorpene is a class of diesel-electric attack submarines (SSK) jointly designed and developed by the French state-owned shipbuilding firm Naval Group and Spanish firm Navantia in the late 1990s.⁵ The overall length and displacement of these submarines can range from 66 m to 75 m and 1,770 tons to 2,000 tons respectively.⁶ The Scorpene has a maximum diving depth of 350 m, top speed of 20 knots and can operate solo for 50 days with a crew of 32 to 44.^{7,8}

1 [“Naval Group and PT PAL Have Signed a Contract with Indonesia for 2 Locally Built Scorpene Evolved Fill LiB Submarines”](#), Naval Group, 2 April 2023.

2 Aaron Matthew Lariosa, [“A Look at Naval Group’s Philippine Navy Submarine Offer”](#), *Naval News*, 26 June 2023.

3 [“Malaysia, India to Step Up Defence Cooperation”](#), *Mint*, 7 January 2008.

4 [“Malaysian Delegation Explores Collaboration on with Scorpene- Class Submarines with India’s MDL”](#), Indian Defence Research Wing, 23 September 2023; [“Brazilian Navy Delegation Visits Western Naval Command”](#), Press Information Bureau, Ministry of Defence, Government of India, 12 July 2022.

5 [“SSK Scorpene-Class Attack Submarine, France”](#), Naval Technology, 16 July 2020.

6 HI Sutton, [“Kalvari Class Submarine: The Scorpene’s New Sting”](#), *Covert News*, 9 April 2021.

7 [“P-75 Scorpene Submarine”](#), Naval Group.

8 [“SSK Scorpene-Class Attack Submarine, France”](#), Naval Technology, 16 July 2020.

The Scorpene is a single hull design as opposed to the double hull design of Russian and Chinese submarines. These submarines possess superior stealth features like advanced acoustic absorption techniques, low radiated noise levels and hydrodynamically optimised shape.⁹ It has six weapon launching tubes and can carry 18 weapons including torpedoes, missiles and mines.¹⁰ The Scorpene is designed to undertake a variety of missions like anti-surface warfare, anti-submarine warfare, intelligence gathering and mine laying in both shallow waters and open seas.¹¹ Also, variants of Scorpene can be equipped with Air Independent Propulsion (AIP) systems that will considerably enhance their endurance.

The Scorpene design was first unveiled in October 1990 during the Le Bourget Naval Exhibition in Paris. In April 1998, Chile made the maiden order for the purchase of two Scorpenes after reviewing designs from at least four countries including Germany and Sweden.¹² The then Chilean Defence Minister Edmundo Jaime Pérez Yoma remarked that the silent operations of the Scorpenes was the deciding factor behind his country’s decision to opt for these submarines over German and Swedish models.¹³ This was followed by Malaysia’s order for two submarines on 5 June 2002. The construction of submarines under both these orders took place in French and Spanish shipyards.

The third and largest order for the Scorpenes was made by India in 2005 for the construction of six submarines under its Project 75 (P75) programme. Unlike the previous orders by Chile and Malaysia, the Indian order called for the construction of these submarines in its state-owned shipyard Mazagon Dock Shipbuilders Limited (MDL) in Mumbai under an intricate process for transfer of technology (ToT).¹⁴ As a result, the core agenda of the P-75 programme went beyond just the acquisition of submarines but also to develop domestic shipbuilding capabilities for achieving indigenisation in defence production.

The construction of the first submarine christened INS Kalvari began in 2006 and was commissioned on 14 December 2017 by Prime Minister Narendra Modi. In his address made at the commissioning ceremony, Prime Minister Modi described INS Kalvari as the prime example of ‘Make in India’ and stated that the skill-set acquired during the construction of this submarine was an asset to India.¹⁵ The sixth and

9 [“The Fifth Scorpene Submarine of Project-74 – Vagir Launched at Mazagon Dock Today”](#), Press Information Bureau, Ministry of Defence, Government of India, 12 November 2020.

10 [“P-75 Scorpene Submarine”](#), no. 7.

11 [“The Fifth Scorpene Submarine of Project-74 – Vagir Launched at Mazagon Dock Today”](#), no. 10.

12 [“The Market for Submarines: A Special Focused Market Segment Analysis”](#), Forecast International, August 2010.

13 Ibid.

14 [“P-75 Scorpene Submarine”](#), no. 7.

15 [“PM Dedicates INS Kalvari to the Nation”](#), Press Information Bureau, Prime Minister’s Office, 14 December 2017.

final submarine INS Vagsheer is currently undergoing sea trials and will be commissioned in 2024.

In July 2023, it was reported that India would be making an additional order for three more Scorpene submarines. The contract for these additional submarines is expected to be finalised by the end of 2024.¹⁶ What sets the Indian submarines apart from the scorpene operated by the other operators is that they are planned to be equipped with indigenously developed AIP systems at a later stage. In June 2023, a contract was signed between DRDO and L&T to jointly develop these systems under a Public-Private Partnership (PPP) model.¹⁷

Brazil became the second-largest operator of Scorpene after its order for four submarines in December 2008. Akin to India’s Project 75 model, Brazil’s contract also called for the indigenous construction of these submarines at their state-owned Itaguaí Shipyard in Rio de Janeiro. Although the Brazilian submarines are not equipped with AIP, the Brazilian design is unique due to their elongated hull of 72 m as opposed to 66 m hull of standard Scorpene. This has been done to carry more batteries which will enable the Brazilian submarines to increase range, extend submerged endurance and accommodate larger crew.¹⁸

The construction of the first submarine designated S40 Riachuelo began in July 2011 and it was commissioned on 1 September 2022.¹⁹ As of now, two submarines have already been commissioned into the Brazilian Navy and a third submarine was launched for sea trails on 27 March 2024 in a ceremony that was attended by Presidents of both Brazil and France.²⁰ Alongside the Scorpene, Brazil and France are also collaborating in the construction of the Brazilian Navy’s first conventionally armed nuclear attack submarine (SSN) that has been christened as Álvaro Alberto.

With the latest order of two submarines, Indonesia is also embarking on the path of indigenisation like India and Brazil. Indonesia’s deal valued around US\$ 2 billion entails the construction of the two Scorpene in its state-owned shipyard PT PAL situated in Surabaya.²¹ This project will make Indonesia the sole ASEAN nation capable of domestically constructing modern submarines.²²

16 Dinakar Peri, [“Contract for Three More Scorpene Submarines Likely by End -2024; First Delivery Expected by 2031”](#), *The Hindu*, 25 July 2023.

17 [“DRDO and L&T Join Hands for Realisation of Indigenous Air Independent Propulsion \(AIP\) System for Submarine of Indian Navy”](#), Larsen & Toubro, 22 June 2023.

18 Richard Scott, [“Brazilian Navy Commissions Second S-BR Submarine”](#), *Naval News*, 15 January 2024.

19 [“Delivery and Commissioning of the Riachuelo, the First Brazilian Scorpene Submarine Entirely Made in Brazil”](#), Naval Group, 2 December 2022.

20 Rodrigo Viga Gair, [“Macron and Lula Launch Submarine Built in Brazil with Frenc Tech”](#), *Reuters*, 28 March 2024.

21 James Guild, [“Indonesia’s Scorpene Submarine Deal with France, Explained”](#), *The Diplomat*, 9 April 2024.

22 Muhammad Fauzan Malufti, [“The Case for Greater ASEAN Defense Industry Collaborations”](#), *The Diplomat*, 29 February 2024.

Platform Specific Technical Cooperation (PSTC)

In the realm of defence cooperation, military platforms by themselves can become a major avenue for collaboration between two or more nations that maintain strong diplomatic relations. Nations may enter into Platform Specific Technical Cooperation (PSTC) arrangements for the purpose of making optimal utilisation of a common military platform. PSTC can facilitate the collective pooling of resources by the operator for maintenance and sharing of operational expertise through joint training programmes. An example of such an arrangement includes the European Defence Agency’s (EDA) Pooling and Sharing Initiative that envisages such technical cooperation among the European Union (EU) nations across a range of military platforms. The core aim of this initiative is to develop operational interoperability between the European armed forces.²³

Also, PSTC may be in the form of a consortium of operators for negotiating with the manufacturer for the supply of spare parts and for availing other technical support packages. The C-17 Global Integrated Sustainment Partnership (GISP) programme is one such arrangement between Boeing which is the manufacturer of the C-17 Strategic airlift aircrafts and its operators that include India. Under this arrangement, Boeing has committed to provide critical services which include engineering, field support and material management for the C-17 fleets of all its operators.²⁴

In some cases, nations may establish PSTC for the co-development of a new military platform that will organically lead to technical collaboration among themselves once the platform is commissioned into their respective armed forces. Type212 CD (Common Design) submarine programme is one such illustration where Norway and Germany have entered into an agreement to jointly build and operate identical classes of SSKs on a common design.²⁵ The agreement also facilitates cooperation between Norway and Germany for joint life-cycle management, maintenance and upgradation of these submarines.²⁶

Overall on a technical level, PSTCs can effectively contribute towards enhancement of the operator’s indigenous defence production capabilities by building the technical acumen and industrial ecosystem that is necessary for the development and maintenance of complex military platforms. At a diplomatic level, PSTCs can play a vital role in building a high degree of confidence between militaries and political trust between governments.

23 [“EDA’s Pooling & Sharing”](#), European Defence Agency, 2013.

24 [“Boeing, U.S. Air Force Extend C-17 Sustainment Partnership with Phased Contract Valued Up to \\$ 23.8 Billion”](#), Boeing, 29 September 2021.

25 [“Norway and Germany to Build Identical Submarines”](#), Marine Link, 12 April 2024.

26 Ibid.

The Scorpene Club

It must be noted that all the Scorpene operators maintain strong diplomatic relations with each other. India’s diplomatic relations with all the other Scorpene operators except Chile is at a level of strategic partnership. Also, India has a very good track record of having PSTC with Malaysia and Indonesia. When the air forces of both these ASEAN nations acquired MiG-29 fighter jets from Russia, they sought Indian assistance for the training of their pilots, aircraft maintenance and supply of spare parts.²⁷

Subsequently, India signed MoUs with both these nations that facilitated the training of Malaysian and Indonesian pilots in India. Also, a contingent of Indian Air Force’s (IAF) pilots and maintenance crew were deployed in Malaysia and Indonesia for this purpose. Another such arrangement was made with Malaysia wherein the IAF trained Malaysian pilots in the operations of their Sukhoi-30 MKM fighters. In 2015, both India and Malaysia agreed to establish a SU-30 Forum to facilitate cooperation in training, maintenance, technical support and safety-related issues.²⁸

This positive track record led to India and Malaysia beginning discussion as early as 2008 for the possibility of cooperation in the joint maintenance and use of Scorpene submarines.²⁹ In these discussions, both nations explored the possibility of joint training of their naval personnel in submarine warfare tactics and collaboration in the life-cycle maintenance of their respective Scorpene fleets.³⁰ Despite these initial discussions, no significant progress was made in this regard by the two governments until recently. In September 2023, a high-level Malaysian delegation visited MDL and revived the discussion for the joint collaboration between the two nations in the maintenance of Scorpene and other naval platforms.³¹

In recent times, discussions in this regard have gained traction between India and Brazil, the two largest operators of the Scorpene. In July 2022, a Brazilian delegation led by Vice Admiral Liberal Enio Zanelatto visited the Indian Navy’s Western Naval Command and MDL. During this visit, both sides had extensive discussions for exploring options for collaboration towards maintenance of the Scorpene.³² Specific avenues of technical cooperation which were identified in these

27 Pankaj Kumar Jha, [“India’s Defence Diplomacy in Southeast Asia”](#), *Journal of Defence Studies*, Vol. 5, No. 1, January 2001.

28 [“Joint Statement on Enhanced Malaysia-India Strategic Partnership”](#), Ministry of External Affairs, Government of India, 23 November 2015.

29 [“Malaysia, India to Step Up Defence Cooperation”](#), no. 3.

30 Pankaj Kumar Jha, [“India’s Defence Diplomacy in Southeast Asia”](#), no. 27.

31 [“Malaysian Delegation Explores Collaboration on with Scorpene- Class Submarines with India’s MDL”](#), no. 4.

32 [“Brazilian Navy Delegation Visits Western Naval Command”](#), Press Information Bureau, Ministry of Defence, Government of India, 12 July 2022.

discussions included the establishment of general maintenance philosophy, upgradation of weapons systems and indigenous production of spare parts.³³

Both nations followed up on this during the Brazilian Navy delegation visit to New Delhi on 5 September 2023. It has been reported that this was among the key issues that were taken up for discussion during the maiden 2 Plus 2 defence and foreign ministerial dialogue between India and Brazil held on 14 March 2024.³⁴ The increasing diplomatic engagement of Brazil and Malaysia with India in this regard indicates the possibility of the materialisation of such a PSTC between the three nations. This arrangement can be expanded to also include Indonesia which in the past had shown keen interest in collaborating with India for the maintenance of its German-origin Type 209 submarines.³⁵

How Can India Benefit?

While the Scorpene Club can collectively benefit all its operators, it can also specifically serve India’s strategic interests. Some of the diplomatic, technological and economic opportunities for India through the Scorpene Club are as follows:

Enhance Profile as a Shipbuilding Nation and Global Maintenance Hub

In October 2023, Prime Minister Narendra Modi unveiled the ‘Maritime Amrit Kaal Vision 2047’ which is a vision document for developing India’s Blue Economy.³⁶ This document envisages to transform the nation’s ports infrastructure and shipbuilding capabilities to make India a global hub for ship maintenance. Naval shipbuilding is an intrinsic element of such a vision and PSTCs with Friendly Foreign Nations for the maintenance and repair of their naval assets can contribute to such an endeavour.

In recent years, such partnerships have enabled India’s strategic partners such as the US and UK to send their naval vessels to Indian shipyards for maintenance and repairs. By entering into such arrangements with fellow operators of Scorpenes, India will not only succeed in strengthening its defence cooperation with strategic partners but also build its image as a global maintenance hub for ships and submarines. This will also contribute to the strengthening of India’s defence industrial ecosystem by enhancing the capability of Indian shipyards, R&D facilities and technical skills of workforce.

33 [“Visit of Brazilian Navy Delegation”](#), Ministry of Defence, Government of India, 15 July 2022.

34 Huma Siddiqui, [“Strengthening Bilateral Defence Ties: Brazil-India 2+2 Secretary Level Dialogue & MTA for IAF”](#), *Financial Express*, 28 February 2024.

35 Pankaj Kumar Jha, [“India’s Defence Diplomacy in Southeast Asia”](#), no. 27.

36 [“Maritime Amrit Kaal: Vision 2047”](#), Ministry of Ports, Shipping and Waterways, Government of India.

Showcase Indigenously Developed Submarine Technologies

In recent years, India has been engaged in designing and developing a range of advanced submarine-related technologies. The most notable among these technologies is the AIP system that is soon to begin trials and is expected to be installed on the Indian Scorpene submarines by the end of this decade.³⁷ Other systems include the heavy weight torpedo (HWT) Varunastra, Submarine-Launched Cruise Missiles (SLCM) and USHUS Integrated Submarine Sonar Suites.

Apart from this, India is also a leading manufacturer of high-end submarine batteries and has successfully exported them to a number of nations including Russia, Algeria, Turkey and Vietnam.³⁸ The Scorpene Club can be an excellent platform for India to showcase technical capabilities of indigenous defence industry including Small and Medium Enterprises to its strategic partners who can become their potential customers.

Technical Exposure for India’s Submarine Modernisation Plan

The Scorpene Club can provide Indian naval architects and engineers with an opportunity to examine and evaluate the various variants of these submarines, including a variety of sub-systems. Such exposure may be critical for the modernisation and upgradation of the Indian Navy’s own Scorpene fleet. For instance, Indonesia will be acquiring an advanced variant of Scorpene that will be fully powered by Lithium-Ion Battery (LiB). As opposed to the conventional lead-acid submarine batteries, the LiBs have reduced charging time and nearly double the range. Hence LiBs can significantly enhance the endurance and performance of SSKs.

In addition, LiBs do not generate carbon monoxide fumes like the conventional lead-acid batteries. In October 2022, the Indian Navy issued a Request for Information (RFI) for the development of a high-capacity LiB system that can be retrofitted on its existing submarine fleet.³⁹ Hence, the possible examination of the Indonesian Scorpene submarines through a PSTC can provide India crucial insights for perfecting its own indigenously developed LiBs and other such systems that are critical for Indian Navy’s submarine modernisation plans.

Avenue for Defence Collaboration Under India’s Act East Policy

The Act East Policy is a diplomatic outlook adopted by successive Indian governments since 1990s. This outlook envisages the enhancement of strategic depth between India and the collective ASEAN states. Consequently, India and ASEAN

37 [“DRDO to Conduct AIP Module Tests on Submerged Platforms, Fueling India’s Submarine Capabilities Revolution”](#), *Manufacturing Today*, 22 July 2023.

38 [“Submarine Batteries”](#), Exide; [“Submarine Battery Exports from India”](#), Volza, 29 January 2024.

39 Huma Siddiqui, [“Revolutionising the Indian Navy’s Submarine Fleet: Shift to Li-Ion Batteries”](#), *Financial Express*, 24 December 2022.

announced the elevation of relations to a level of comprehensive strategic partnership in 2022. In this context, the Scorpene Club presents an opportunity for India to deepen its strategic cooperation with Malaysia and Indonesia which are two key maritime states of ASEAN. Like the MiG-29s and SU-30s, the Scorpene Club can also strengthen defence cooperation between India and Malaysia. Likewise, India can offer assistance to Indonesia in the construction of the two Scorpene Clubs by sharing its own experiences gained from the indigenous manufacturing of these submarines.

Enhance India's Geostrategic Outreach to Latin America

The two largest operators of the Scorpene Clubs, India and Brazil, belong to distant and disparate geographical regions. Hence, being from very different security environments, India and Brazil have less exigencies to collaborate in security areas.⁴⁰ Despite this, in recent years both nations have been brought closer by their deepening bilateral relations. This has been evident from their strategic convergences across various plurilateral and multilateral forums like BRICS, BASIC, G-20, G-4, IBSA, WTO and UN.⁴¹

Both nations elevated their bilateral relations to the level of strategic partnership in 2006. Since then, various bilateral mechanisms have been established to increase cooperation in the areas of foreign policy, defence, trade, science, manufacturing and cultural exchange. In this backdrop, collaboration in the field of submarine maintenance can immensely deepen the defence cooperation between the two regional powers. This can also lead to future high level strategic collaborations between India and Brazil as both nations are engaged in the indigenous construction of SSNs. Further, this may give access to India in developing strong relations with other Latin American nations like Chile which is also an operator of the Scorpene Clubs.

Conclusion

Submarines are some of the most complex military platforms. Their construction and maintenance requires a very high level of technical prowess, industrial capacity and skilled workforce. That is why submarines and their related technologies have become the basis of high-profile technical collaborations like AUKUS. In this context, the creation of a Scorpene Club could collectively benefit all the operators of the French-origin submarine. India having built the largest number of these submarines indigenously has the opportunity to be a key driver behind such a technical collaboration. The recent high-level diplomatic exchanges between India, Brazil and Malaysia in this regard may lead to the successful materialisation of the Scorpene Club.

40 Priti Singh and Devika Misra, “[India-Brazil Strategic Partnership](#)”, *Indian Foreign Affairs Journal*, Vol. 14, No. 3, July–September 2019, pp. 181–194.

41 “[India- Brazil Relations](#)”, Ministry of External Affairs, Government of India, 2021.

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