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India-Germany Strategic Partnership — Project 75I, Semiconductors, and the G4 Axis

19 January 2026

SUBJECTS COVERED**IR SECURITY & DEFENCE****CURATED & WRITTEN BY****Bharat Choudhary**

UPSC Educator & Content Creator •

[linkedin.com/in/epicbharat](https://www.linkedin.com/in/epicbharat)

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WHY IN NEWS

German Chancellor Friedrich Merz visited India on his first major bilateral engagement outside the EU and US, unlocking a landmark USD 8 billion submarine deal (Project 75I) with Air-Independent Propulsion technology, semiconductor and critical minerals cooperation agreements, and a push to finalise the India-EU Free Trade Agreement. The visit marks a new phase in the Indo-German Strategic Partnership, with both nations converging on supply-chain diversification, UNSC reform, and Indo-Pacific stability.

THE STRUCTURAL LOGIC OF INDIA-GERMANY CONVERGENCE

India and Germany are among the world's most consequential democracies — yet their bilateral relationship has, for decades, been underweighted relative to its potential. Germany is Europe's largest economy; India is Asia's third-largest. Together they account for approximately USD 7 trillion in annual economic output. Yet bilateral trade stands at **~USD 50 billion** annually — substantial but representing a fraction of the potential in technology, clean energy, and defence.

The Chancellor Merz visit signals a recalibration driven by three structural shifts:

First, Germany's China dependency crisis. For most of the 2010s, Germany's economic strategy centred on China — as a manufacturing destination, a consumer market, and a supply chain partner. The 2022 Russia energy crisis demonstrated the risks of strategic dependency on authoritarian partners. Germany's pivot under successive governments (Merkel's last term, Scholz, now Merz) involves reducing China exposure across semiconductors, critical minerals, and manufactured goods. India is the most credible diversification destination.

Second, India's Europe outreach. India's diplomatic bandwidth toward Europe has historically been thin relative to its engagement with the US, Gulf, and ASEAN. The Russia-Ukraine war (2022–present) created complexity — India abstained on UN resolutions condemning Russia, straining relations with European governments. Yet the underlying convergences — democratic values, rules-based order, UNSC reform, Indo-Pacific stability — remain strong. Chancellor Merz's visit is part of a pattern of re-engagement.

Third, UNSC reform's momentum. Both India and Germany are **G4 members** — the informal alliance of India, Germany, Japan, and Brazil collectively seeking reform of the UN Security Council to include new permanent members. As the UNSC faces credibility challenges (paralysed on Ukraine, Gaza, Sudan), the G4's case for expanding permanent membership to include major emerging democracies grows stronger.

PROJECT 75I — THE SUBMARINE DEAL

The most strategically significant deliverable from the visit is the **Project 75I submarine acquisition**:

BACKGROUND

India's submarine fleet is ageing. The **Indian Navy's target of 18 conventional submarines** is far from met — currently operating around 16 submarines (Sindhughosh-class, Vela-class Scorpene variants), with several approaching end-of-life. Project 75 (the six Scorpene-class submarines built at Mazagon Dock Shipbuilders, Mumbai, in collaboration with French Naval Group) is complete. **Project 75I** is its successor — for six advanced conventional submarines.

WHY AIR-INDEPENDENT PROPULSION (AIP) MATTERS

Conventional diesel-electric submarines must **snorkel** (surface partially to run diesel engines and recharge batteries) approximately every 2–3 days. This creates vulnerability — the submarine is detectable on radar and sonar during the snorkel event.

Air-Independent Propulsion (AIP) systems eliminate this need:

Fuel cell AIP (German HDW/TKMS system): Combines liquid oxygen and hydrogen in an electrochemical fuel cell to generate electricity directly — no combustion, no noise, no exhaust

Enables submerged endurance of **2–3 weeks** without snorkeling (vs 2–3 days for conventional diesel-electric)

Germany's Type 212 and Type 214 submarines use this technology — considered the world's most advanced conventional AIP

Other AIP variants: Stirling engine (Japan, Sweden), MESMA (France, Pakistan — used in Agosta-class)

India's existing Scorpene-class submarines do not have AIP. The Project 75I submarines will be the first Indian submarines with AIP — dramatically improving their operational endurance in the Indian Ocean, particularly the strategically vital Strait of Hormuz approaches, Malacca Strait, and deep-water areas around the Andaman and Nicobar Islands.

DEAL STRUCTURE

Value: USD 8 billion

Submarines: 6 next-generation conventional submarines

Technology: German AIP (Air-Independent Propulsion)

Build location: India — consistent with Atmanirbhar Bharat defence manufacturing policy

Partner: German company TKMS (ThyssenKrupp Marine Systems) expected to be key technology collaborator, with Indian shipyard (likely Mazagon Dock or L&T) as prime contractor

SEMICONDUCTOR AND CRITICAL MINERALS COOPERATION

Beyond defence, the visit produced two economically strategic MOUs:

SEMICONDUCTOR ECOSYSTEM MOU

India and Germany will cooperate to develop semiconductor supply chains that reduce dependence on East Asian production (particularly Taiwan for fabrication, and South Korea/Japan for equipment and chemicals)

Germany hosts major semiconductor equipment companies (Zeiss — critical for EUV lithography optics; Merck KGaA — speciality chemicals for chip manufacturing)

Access to German-origin semiconductor materials and equipment strengthens India's Semiconductor Mission (six fabs approved/in development: Tata Electronics at Dholera, Micron at Sanand, CG Power-Renesas at Sanand)

CRITICAL MINERALS PARTNERSHIP

Lithium, cobalt, nickel, and rare earths cooperation — essential for EV batteries, defence electronics, and clean energy technologies

Germany faces critical mineral vulnerabilities (currently ~90% dependent on China for rare earths)

India has significant lithium reserves (discovered in Jammu and Kashmir; Rajasthan; potential in Chhattisgarh) and rare earth deposits (Odisha, Andhra Pradesh)

The partnership creates a framework for joint exploration, processing, and trade in these materials

GREEN AND SUSTAINABLE DEVELOPMENT PARTNERSHIP (GSDP)

The **Green and Sustainable Development Partnership** deepened with new commitments:

German **KfW Development Bank** concessional loans for India's **green hydrogen** production infrastructure

Collaboration on **solar manufacturing** (thin-film technology)

Germany's industrial decarbonisation technology (hydrogen-based steel, cement) relevant to India's heavy industry transition

India's NDC (2022 update): Net zero by 2070; 50% non-fossil energy by 2030; 1 billion tonne CO₂ reduction by 2030

INDIA-EU FTA: MERZ AS A CATALYST

Negotiations for an **India-EU FTA** have been on-again, off-again since 2007 — resumed in 2022 after a decade hiatus. Chancellor Merz explicitly pushed for finalisation:

Germany benefits disproportionately from India's manufacturing growth — as a supplier of capital goods, technology, and engineering

The EU has concluded FTAs with Canada (CETA), Japan (EPA), South Korea, Singapore — India remaining outside this framework is increasingly anomalous

Key sticking points: India's auto tariffs (EU wants lower tariffs for European EVs/luxury cars), data localisation rules, government procurement access

A finalised India-EU FTA would be the world's largest bilateral trade agreement by GDP combined (~USD 24 trillion)

UPSC RELEVANCE

G4 (India, Germany, Japan, Brazil — UNSC reform); Project 75I (USD 8 billion; 6 submarines; AIP; TKMS); AIP types (fuel cell, Stirling, MESMA); Mazagon Dock Shipbuilders (Project 75 Scorpene); India-Germany bilateral trade (~USD 50 billion); KfW Development Bank (German development finance); GSDP (Green and Sustainable Development Partnership)

MAINS GS-2:

“How does the India-Germany strategic partnership reflect India's multi-alignment foreign policy in a multipolar world? Assess the significance of the G4 axis for UNSC reform.” | “Analyse India-EU FTA prospects in the context of Chancellor Merz's India visit.”

MAINS GS-3:

“Examine the strategic significance of AIP technology for India's submarine fleet and the implications of the Project 75I deal for India's indigenisation in defence manufacturing.” | “How does the India-Germany semiconductor and critical minerals partnership advance India's Atmanirbhar Bharat objectives?”

INTERVIEW:

“India abstained on UN resolutions condemning Russia's invasion of Ukraine, straining ties with Germany and European partners. How can India balance its strategic autonomy with the imperative of maintaining strong partnerships with democratic Europe?”

★ FACTS CORNER — KNOWLEDGEPEDIA

INDIA-GERMANY RELATIONS:

- Bilateral trade: ~USD 50 billion/year | Germany: India's largest EU trading partner
- India-EU total trade: ~USD 200 billion | Germany share: ~25%
- Indian students in Germany: 60,000+ (largest international cohort in Germany)
- EU Blue Card: Germany is top beneficiary destination for Indian professionals
- India-Germany Strategic Partnership: Established 2000; upgraded to "Focussed Partnership" framework

PROJECT 75I:

- Value: USD 8 billion | Submarines: 6 conventional | Technology: German AIP
- Build: India (Atmanirbhar Bharat; Mazagon Dock or L&T likely prime contractor)
- German partner: TKMS (ThyssenKrupp Marine Systems) — maker of Type 212/214 submarines
- Project 75 (predecessor): 6 Scorpene-class submarines; completed 2023; French Naval Group collaboration; Mazagon Dock build

AIR-INDEPENDENT PROPULSION (AIP):

- Purpose: Enables submerged operation without snorkeling (recharging batteries)
- Duration: 2–3 weeks vs 2–3 days (conventional diesel-electric)
- German type: Fuel cell AIP (hydrogen + liquid oxygen; electrochemical; silent)
- Stirling engine AIP: Japan, Sweden
- MESMA (Module Energie Sous-Marin Autonome): France; used in Pakistan Agosta-90B

G4 GROUP:

- Members: India, Germany, Japan, Brazil
- Goal: Reform of UN Security Council — adding new permanent members
- Current P5: USA, UK, France, Russia, China (all WWII-era victors; veto powers)
- G4 position: Expand P5 or create new non-veto permanent seat category for G4 + 2 Africa seats

SEMICONDUCTOR ECOSYSTEM:

- German role: Zeiss (EUV optics for ASML lithography machines); Merck KGaA (chip chemicals)
- India fabs: Tata Electronics (Dholera; Rs 91,000 crore; TSMC collaboration); Micron (Sanand; USD 2.75 billion ATMP); CG Power-Renesas (Sanand)
- SCL Mohali: Semi-Conductor Laboratory; India's existing public-sector fab; 180nm technology

GSDP (GREEN AND SUSTAINABLE DEVELOPMENT PARTNERSHIP):

- German KfW: Kreditanstalt für Wiederaufbau (Reconstruction Credit Institute); Germany's development bank
- India's green hydrogen target: 5 million tonnes/year production by 2030 (National Green Hydrogen Mission)
- India NDC: Net zero by 2070; 50% non-fossil electricity by 2030

OTHER RELEVANT FACTS:

- CETA: Canada-EU Comprehensive Economic and Trade Agreement (2017)
- India-EU FTA resumed: 2022 (after 2013 break); 10th round ongoing; sticking points: auto tariffs, data rules
- Critical minerals China dependency: EU gets ~90% of rare earths from China
- Jammu and Kashmir lithium: 5.9 million tonne inferred reserve discovered 2023 (Geological Survey of India)

INS Arihant: India's nuclear-powered ballistic missile submarine (SSBN) — different class from conventional Project 75I subs

Sources: Insights on India, MEA India, PIB

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Bharat Choudhary

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