Editorial

It gives me great pleasure to present to you the second part of the special issue on "Atmanirbharta (Self-Reliance) in Defence and Aeronautics", while work is in progress for another special issue titled "India–US Defence Cooperation", which will be published subsequently. Like Part I of the special issue, Part II also features a mix of insightful articles and commentaries focusing on India's goal to become self-reliant (*atmanirbhar*) in critical technologies including defence and aeronautics. This issue consists of 12 articles, seven commentaries and a book review.

The first article is titled "Pathways to Self-Reliance in Combat Aircraft: A Strategic Roadmap for India's Aeronautical Sector". In this article, Mr Biju Uthup has outlined a strategic roadmap, focusing on building indigenous capabilities in advanced combat aircraft, propulsion systems and unmanned systems through targeted investments, policy reforms and strategic alliances, which will help position India as a globally competitive player in aeronautics industry by 2047.

In the second article titled "The Role of MSMEs in Shipbuilding and Future Naval Technologies: Strategy to Transition from Atmanirbharta to Atmanirbhar by 2047", Dr Prakash Panneerselvam and Cmde KG Ramkumar (Retd) discuss the potential role of micro, small and medium enterprises (MSMEs) in constructing next-generation warships and combat systems. The article identifies key areas of focus for research and development, explores the challenges MSMEs face in building research ecosystems, and recommends effective strategies to empower them to participate in building advanced warships for India.

In today's geopolitical landscape, achieving self-reliance in critical sectors like ammunition manufacturing is paramount for nations worldwide. Titled "From Import Dependency to Export Competency: India's Path towards Self-Reliance in Ammunition Manufacturing", the next article by Brig (Dr) Biju Jacob delves into understanding ammunition manufacturing intricacies, ammunition export/import trends, highlighting challenges, strategies and transformative initiatives.

It is followed by an article titled "Strengthening Indigenous Capabilities: Analysis of India's Defence R&D Ecosystem", in which Dr Abhishek Yadav explores how India is positioning itself in the global innovation landscape, the evolution of its domestic defence R&D ecosystem and the indigenisation drive underpinned by a 'whole-of-nation' approach.

In the fifth article "Public–Private Partnership in Defence Aeronautics: Why has the PPP Model not caught on in Indian Defence Development Projects?", Dr Nabanita R. Krishnan critically examines the existing ecosystem to find out reasons for the lack of advancement in specific areas of defence development, and presents a case for establishment of a public–private entity for major system development in defence aeronautics.

In India, Defence Public Sector Undertakings (DPSUs) have played a key role in the country's pursuit of self-reliance since its independence. From time to time, the question about the effectiveness of DPSUs has been raised, especially given the global trend of encouraging private sector participation in defence manufacturing. In the article titled "Role of DPSUs in Atmanirbharta", Dr Rajiv Nayan discusses this issue in detail and explores the continued relevance of DPSUs in achieving 'atmanirbharta' in India's defence sector, while also giving specific suggestions for enhancing their capabilities to align themselves with emerging global opportunities.

In the seventh article titled "Lessons for Atmanirbharta from Project Beta, an Aborted Pioneering Effort in Indian Defence Innovation", Col DPK Pillay talks about 'SATHI' (Situational Awareness Tactical Handheld Interface), a product of a path-breaking initiative under Code Name Project Beta, which not only validated India's innovative prowess in military technology but also heralded a new era of tactical advantage for the Indian Army on the battlefield. The article discusses how this handheld tactical computer would have empowered soldiers with enhanced situational awareness, secure communication channels and real-time navigation capabilities, if it had been introduced.

The next article titled "Geopolitics of the Intellectual Property Rights: Implications for India's National Security", is by Ms Gargi Shanbhag. This article focuses on the significance of Intellectual Property Rights (IPR) in science and technology and analyses the importance of power projection and how the IPR regime is dominated by developed nations. It also evaluates India's IPR in defence research and development as a case-in-point. It is followed by an article titled "Bharat's Leap: From Import Dependence to Atmanirbharta in Defence Equipment Manufacturing", by Mr Naved

Akhtar Khan and Dr Amit Kumar Gupta. In this article, an attempt has been made to comprehensively analyse India's path of progress from being the largest importer of arms to becoming self-reliant and an active defence equipment manufacturer in the world.

In the tenth article titled "Atmanirbhar Export: Leveraging Indigenous Defence Production for Strategic Autonomy and Global Outreach", Dr Neeraj Singh Manhas and Mr Hari Yadav G. assess India's efforts to achieve self-sufficiency in supporting global initiatives, and set targets for future growth to fulfil export goals by 2025 through the 'Atmanirbhar Bharat' initiative, which seeks to position India as a major defence exporter in the world.

For decades, India shared a strained relationship with the multilateral export control regime and was often viewed as a target or an outsider. However, in the last two decades, after prolonged and synergistic efforts, India has managed to obtain membership of three of the four key institutions (the Missile Technology Control Regime, the Australia Group and the Wassenaar Arrangement) and a waiver in the Nuclear Suppliers Group, short of full membership, under the multilateral export control regime. The key factors that have played a role in this development, have been covered in the eleventh article titled "India's Membership to the Missile Technology Control Regime: Analysing Causal Factors, Defence Self-Reliance, Defence Export Potential and Space Capabilities", by Dr Manisha Chaurasiya and Dr Vijay Kumar Yadav.

In the present era, Unmanned Aerial Vehicles or drones have emerged as the lynchpin of the defence sector undergoing modernisation around the world. There is little doubt that the capability and trajectory of India's drone programme and the related technologies vital for its manufacturing would determine the contours of India's roadmap to becoming an *atmanirbhar* (self-reliant) country in the defence sector. In the last article titled "Drone Technology: India's Leap Towards Defence Atmanirbharta", Prof. Manish and Mr Arjun Singh Dyarakoti analyse India's growing leap in developing drones and counter-drone systems, the hurdles and challenges that exist and the measures taken to strengthen the technology architecture for drone production in the country.

This special issue also features seven commentaries and a book review. We hope that this special issue will be received well by our readers. We would also like to thank the authors and the referees who assisted us in the peer review process. We would appreciate feedback from our readers about topics they

feel should be addressed by the journal. We hope that along with our growing readership, we will see a further increase in the number of contributions for our future issues.

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