

III. The Indian arms-production and military services industry

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Having tried for more than a decade to develop a self-sufficient indigenous arms industry, in January 2011 the Indian Government announced its first official defence production policy.¹ This long-term process had been prompted by a national security review that followed the 1999 Kargil conflict with Pakistan. Indeed, the bulk of India's arms acquisitions have been motivated by perceived external threats from Pakistan and China as well as India's ambitions to become a regional power in competition with China.²

Over the next decade, India plans to spend an estimated \$150 billion on modernizing, upgrading and maintaining military equipment for its armed forces, with some estimates predicting that this upward spending trend will continue until 2040.³ However, it is unlikely to meet demand via domestic production alone, with the general consensus being that Indian defence industry policy requires major reforms in the areas of research and development (R&D) and acquisitions.⁴ In addition, India faces the cost burden of developing and maintaining a private arms industry that has only existed since 2001, a late start when compared to countries with similar levels of military expenditure and domestic arms industry ambitions.⁵

It is widely thought that state-owned facilities will be unable to meet India's military equipment demands.⁶ By the government's own reckoning, half of the domestically produced equipment is obsolete and only 15 per cent is considered state-of-the-art.⁷ According to one estimate, in order to achieve a reversal of the current situation, in which 70 per cent of all arms and military services are foreign-sourced, the Indian arms industry would need to double its production output every year for five years.⁸ This annual doubling is unlikely to be achieved due to the expense of building and

¹ Indian Ministry of Defence, *Defence Production Policy* (Department of Defence Production: New Delhi, 1 Jan. 2011). See also Smith, C., SIPRI, *India's Ad Hoc Arsenal: Direction or Drift in Defence Policy?* (Oxford University Press: Oxford, 1994), pp. 204–20.

² Holtom, P. et al., 'International arms transfers', *SIPRI Yearbook 2011*, pp. 278–83.

³ Agency for the Dissemination of Technology Information (ADIT), *Who's Who: Key Decision Makers of the Indian Defense Sector* (ADIT: Paris, 2009), p. 22. See also Confederation of Indian Industry, 'Defence sector', <<http://www.cii.in/Sectors.aspx?SectorID=S000000003>>.

⁴ Deloitte and Confederation of Indian Industry, *Prospects for Global Defence Export Industry in Indian Defence Market* (Deloitte: New Delhi, 2010), p. 98.

⁵ Indian Ministry of Defence, 'Defence production: supplies wing', <<http://mod.nic.in/product&supp/welcome.html>>. On cost burden see Jackson, S. T., 'Arms production', *SIPRI Yearbook 2011*, pp. 233–36.

⁶ Agency for the Dissemination of Technology Information (note 3), p. 20.

⁷ Indian Department of Industrial Policy and Promotion (DIPP), *Foreign Direct Investment (FDI) in Defence Sector* (DIPP: New Delhi, 17 May 2010), p. 2.

⁸ Deloitte and Confederation of Indian Industry (note 4), p. 13.

maintaining a domestic arms industry and external barriers to transfer of knowledge and technology by foreign arms exporters.⁹ Nevertheless, pressures on global arms producers to find export markets, especially at a time of reduced public spending in the Global North, give India growing leverage in negotiating purchasing conditions and more opportunities to offer economic incentives for foreign technology transfers.¹⁰

India's arms industry structure

One of the conclusions of the national security review that followed the 1999 Kargil conflict was that India needed to rebuild its arms industry in order to, in particular, facilitate arms acquisition and domestic arms production.¹¹ Arms production and military services were formerly under the purview of the Indian Government. Since May 2001 the government has allowed the private sector to participate in the arms industry on the condition that companies obtain a licence from the Department of Industrial Policy and Promotion (DIPP) in cooperation with the Ministry of Defence (MOD).¹² The current policy allows for 100 per cent private ownership by Indian companies and up to 26 per cent foreign ownership via foreign direct investment (FDI).¹³ The government has discussed privatizing Hindustan Aeronautics Limited (HAL) and is planning an initial public offering (IPO), although a timeframe has not been set.¹⁴

The Indian arms industry is dominated by state-owned companies: Indian Ordnance Factories' 39 factories and the 8 Defence Public Sector Undertakings (DPSUs). Of the 30 per cent of Indian arms procurement that comes from domestic sources, 21 per cent is procured from state-owned businesses and 9 per cent is procured directly from the private sector.¹⁵ Ordnance Factories and the DPSUs accounted for approximately 386 billion rupees (\$8.4 billion) in turnover in 2010, according to official figures.¹⁶ While it is more difficult to obtain figures for the private sector, this part of the Indian arms industry is growing as major industrial conglomerates diversify into the military sector. For example, Tata Group, Mahindra Group, Kirloskar Group, and Larsen and Toubro are forming joint ventures

⁹ Deloitte and Confederation of Indian Industry (note 4), p. 36.

¹⁰ Holtom et al. (note 2), p. 280. See also section I above.

¹¹ Agency for the Dissemination of Technology Information (note 3), p. 14.

¹² Indian Ministry of Defence (note 5).

¹³ Indian Ministry of Defence (MOD), *Annual Report 2010–2011* (MOD: New Delhi, 2011), p. 55; and Indian Department of Industrial Policy and Promotion (note 7), p. 3.

¹⁴ The IPO is likely to amount to 10% of the company's value, or an estimated \$400 million. Grevatt, J., 'Banks line up to lead Hindustan Aeronautics IPO', *Jane's Defence Industry*, 11 Nov. 2011.

¹⁵ KPMG and Confederation of Indian Industry, *Opportunities in the Indian Defence Sector: An Overview* (KPMG: New Delhi, 2010), p. 21; and Indian Department of Industrial Policy and Promotion (note 7), p. 2.

¹⁶ Indian Ministry of Defence (note 13), p. 56.

with both Indian and foreign companies.¹⁷ In addition to these large companies, there are also a number of small and medium-sized enterprises (SMEs). Ordnance Factories and the DPSUs outsource 20–25 per cent of their orders to these companies.¹⁸

Three Indian companies appear in the SIPRI Top 100 arms-producing and military services companies for 2010: Bharat Electronics Limited (BEL), HAL and Ordnance Factories (see section IV below). HAL, the largest of the DPSUs, derives 90 per cent of its sales from the Indian armed forces.¹⁹ With arms sales of \$2.48 billion in 2010, it ranked 34th in the SIPRI Top 100. Ordnance Factories' arms sales of \$1.96 billion in 2010 ranked it at 46th, while BEL, another DSPU, with sales of \$971 million, ranked at 71st in the SIPRI Top 100. Both Ordnance Factories and BEL attribute 80 per cent of their sales to the Indian MOD. Over the period 2002–10, HAL's arms sales increased by 383 per cent, Ordnance Factories' by 69 per cent and BEL's by 138 per cent. Over this period, arms sales figures for both HAL and BEL have increased continually, while there were minor fluctuations in Ordnance Factories' overall growth. Between 2002 and 2010, HAL's arms sales as a share of total sales ranged between 80 and 90 per cent, while Ordnance Factories' ranged between 73 and 82 per cent, and BEL's ranged between 76 and 85 per cent.

While FDI is currently capped at 26 per cent, there is an ongoing, and often heated, debate over the appropriate level of foreign investment in the Indian arms industry. Some argue for maintaining the current level, others support a maximum limit of 49 per cent and still others have advocated a 74 per cent limit.²⁰ Proponents of increasing FDI argue that it would lead to higher incentives to transfer technology and for foreign original equipment manufacturers (OEMs) to invest; the MOD argues that such an increase would jeopardize local industry and possibly threaten national security interests.²¹

According to the latest official figures, in 2009 India exported arms worth a total of \$70 million.²² However, India exports few finished weapons systems; instead, it exports parts and components.²³ In contrast, India was

¹⁷ KPMG and Confederation of Indian Industry (note 15), p. 21. See also 'Government to encourage private shipyards for increasing the submarine building capacity', *Defence Now*, 24 May 2011, <<http://www.defencenow.com/news/179/government-to-encourage-private-shipyards-for-increasing-the-submarine-building-capacity.html>>.

¹⁸ KPMG and Confederation of Indian Industry (note 15), p. 22.

¹⁹ Indian Ministry of Defence (note 13), p. 59.

²⁰ Industry supports an increase to 49%, while the DIPP advocates 74%. Indian Department of Industrial Policy and Promotion (note 7), p. 9.

²¹ The 26% limit is often cited as having a deterrent effect on foreign investment in the arms industry. Behera, L., 'India's defence offset policy', *Strategic Analysis*, vol. 33, no. 2 (Mar. 2009), p. 246.

²² See chapter 6, section VI, in this volume. The figure is in constant (2010) US dollars.

²³ See e.g. Boeing, 'Boeing teams with Hindustan Aeronautics Limited for P-81 weapons bay doors', Press release, 11 Feb. 2010, <<http://boeing.mediaroom.com/index.php?s=43&item=1073>>.

the largest importer of major conventional weapons in the period 2007–11, with the vast majority coming from Russia.²⁴

India's arms production framework

The Indian Government's 2011 arms production policy integrates policies that had previously been articulated in a variety of statements and procedures and outlines the government's agenda for developing and maintaining a domestic arms industry.²⁵ Its stated objectives are (a) achieving a high level of self-reliance within as short a time as possible; (b) creating the conditions necessary for private industry participation; (c) increasing the role of SMEs in the weapon indigenization process; and (d) broadening the industry's R&D base.²⁶ It also lays out a procurement procedure reiterating policies on offsets (i.e. the necessary involvement of a local joint venture partner or local supplier) and industrial licencing (requiring companies entering arms production to obtain a licence).²⁷ One potential barrier in the licencing regime is the stipulation that foreign companies can only choose partners that already have (or are likely to receive) licences. It therefore becomes difficult to formulate an offset strategy if a company is unsure whether it can licence its products.²⁸

Two of the Indian MOD's four departments have a direct impact on the structure and output of the Indian arms industry. Established in 1962, the Department of Defence Production (DDP) manages general arms production issues (such as indigenization of imported equipment) and also plans for and controls Ordnance Factories and the DPSUs. Since 1958 the Department of Defence Research and Development (DDRD) has overseen the Defence Research and Development Organisation (DRDO); advised the MOD on scientific aspects of military equipment and logistics; and provided input on the research, design and development of equipment for the armed forces.²⁹

There are other key players outside the MOD. Within the Ministry of Commerce and Industry, for example, the DIPP is tasked with FDI policy formulation, approval and promotion, including facilitating and increasing

²⁴ See chapter 6, section I, in this volume.

²⁵ Ben-Ari, G. and Lombardo, N., 'India's military modernization', Centre for Strategic and International Studies, 1 Apr. 2011, <<http://csis.org/publication/indias-military-modernization>>.

²⁶ Indian Ministry of Defence (note 1), p. 1.

²⁷ Indian Department of Industrial Policy and Promotion (note 7), pp. 3–4.

²⁸ Behera (note 21), p. 246.

²⁹ Indian Ministry of Defence, 'About the ministry', <<http://mod.nic.in/aboutus/welcome.html>>; Indian Ministry of Defence, 'Defence production: overview', <<http://mod.nic.in/product&supp/welcome.html>>; and Indian Defence Research and Development Organisation, 'Genesis & growth', <<http://drdo.gov.in/drdo/English/index.jsp?pg=genesis.jsp>>.

the flow of FDI to the arms industry.³⁰ The industry itself is represented by a number of associations including the Confederation of Indian Industry (CII) and the Federation of Indian Chambers of Commerce and Industry.³¹

The Defence Acquisition Council (DAC) is charged with advising on and approving capital acquisitions in the Long-Term Integrated Perspective Plan (LTIPP). Under the LTIPP, the DAC designates capital acquisitions according to five categories: (a) 'Buy' (an outright purchase of equipment); (b) 'Buy and Make (India)' (a purchase from an Indian company in a production arrangement with a foreign OEM); (c) 'Buy and Make (global)' (purchases from a foreign vendor with a licence agreement for local content); (d) 'Make' (indigenous production of highly technological systems); and (e) 'Upgrade' (for any category of in-service equipment).³²

While offset policies were introduced in India in the 1960s, they were not officially formulated until 2005, when the Indian MOD added an offset clause to its arms procurement guidelines. The clause was clarified in 2006 and again in 2008.³³ The DDP's Defence Offset Facilitation Agency (DOFA)—a body with representatives from the armed forces, the DRDO, industry associations, Ordnance Factories and the DPSUs—is responsible for facilitating implementation of offset policies.³⁴ Projects valued at 3 billion rupees (\$65 million) or more are required to include 30 per cent defence-specific offsets, although the government reserves the right to increase the percentage on a case-by-case basis.³⁵

The DRDO has set up four research boards covering both military and civilian research areas. The boards bring together academia, R&D centres and industry and provide grants-in-aid for collaborative projects on defence-related forward-focused research.³⁶ The R&D sector has been criticized for its lack of ability to absorb technology transfers, which contributes to the high level of obsolete equipment produced by the Indian arms industry.³⁷ At the same time, in 2009–10 India spent 84.8 billion rupees (\$1.85 billion)—7 per cent of its military budget—on R&D, while it

³⁰ Indian Department of Industrial Policy and Promotion, 'Role and functions of the Department of Industrial Policy & Promotion', <<http://dipp.nic.in/English/AboutUs/Roles.aspx>>.

³¹ Confederation of Indian Industry (note 3); and Federation of Indian Chambers of Commerce and Industry, 'Defence', <<http://www.ficci.com/sector.asp?secid=9>>.

³² Indian Ministry of Defence (MOD), *Defence Procurement Procedure: Capital Procurement* (MOD: New Delhi, 2011).

³³ Behera (note 21), pp. 242–43.

³⁴ Indian Defence Offset Facilitation Agency, 'Vision statement', <<http://mod.nic.in/DOFA.htm>>. It has been argued that DOFA cannot manage its workload. See e.g. Behera (note 21), p. 244.

³⁵ Indian Defence Offset Facilitation Agency (note 34). As with FDI, there are complaints over India's offset policy. See e.g. Komradin quoted in Anderson, G., 'Eurocopter, HAL collaboration targets international markets', *Jane's Defense Industry*, 22 July 2011.

³⁶ Indian Defence Research and Development Organisation, 'Research boards', <<http://drdo.gov.in/drdo/English/index.jsp?pg=researchboards.jsp>>.

³⁷ Indian Department of Industrial Policy and Promotion (note 7), p. 3.

has budgeted 103 billion rupees (\$2.25 billion) for 2011–12.³⁸ In addition, in order to encourage domestic and foreign private sector investment in R&D, the government has offered to share development costs by contributing 80 per cent of project funding.³⁹ It has also begun to fund private industry R&D, although at much lower levels.⁴⁰

Individual DPSUs also maintain R&D centres. In addition to production facilities, HAL operates 10 R&D centres that work on design and production infrastructure for military aircraft and avionic systems, among other things. Ordnance Factories runs 12 development centres working in a variety of areas including night vision thermal imaging, vehicle armour and ammunition. BEL has three central R&D laboratories that focus on technology such as surveillance software and missile simulation. Between 2008 and 2010 BEL's R&D funding grew by 25 per cent, while its turnover in the same period grew by only 10 per cent.⁴¹

India's military services industry

A number of arms producers in India have been expanding their military services portfolios. To support these efforts, the DRDO focuses on a number of services-oriented projects and programmes. One example is a computerized war-gaming system (Sangram-II), which is used for tactical training, planning and strategy development. The DRDO is also conducting research on net-centric operations and communication secrecy systems.⁴²

On the company side, 80 to 85 per cent of HAL's overhaul and services sales come from the Indian armed forces.⁴³ HAL provides a variety of services for military aircraft including overhaul, general maintenance, repair and overhaul (MRO), logistics management, on-site repair, product training and design support.⁴⁴ Among other companies, BEL provides maintenance and training services in electronics, while Hindustan Shipyard and Goa Shipyard provide some similar services for ships and submarines.⁴⁵

³⁸ Indian Ministry of Defence (note 13), p. 14; and Behera, L., Institute for Defence Studies and Analyses (IDSA), New Delhi, Communication with author, 7 Jan. 2012.

³⁹ PricewaterhouseCoopers and Confederation of Indian Industry, *Changing Dynamics: India's Aerospace Industry* (PricewaterhouseCoopers: New Delhi, 2009), p. 32.

⁴⁰ An estimated 1.18 billion rupees (\$26 million) has been made available for financial year 2011/12 for prototype development under the 'Make' procedure described above. Behera (note 21).

⁴¹ Indian Ministry of Defence (note 13), pp. 57, 59, 63.

⁴² Indian Ministry of Defence (note 13), p. 90.

⁴³ Behera (note 21), p. 245.

⁴⁴ Anderson (note 35). See also Hindustan Aeronautics Ltd, 'Accessories Division Lucknow: our services', <<http://www.hal-india.com/Accessories/services.asp>>; and Hindustan Aeronautics Ltd, 'Aircraft Division Nasik: our services', <<http://www.hal-india.com/AircraftNasik/services.asp>>.

⁴⁵ Indian Ministry of Defence (note 13), pp. 62, 66. See also Hindustan Shipyard Ltd, 'Ship Repairs Division', <<http://www.hsl.nic.in/sr.html>>.

Military services are covered by India's offset regulations.⁴⁶ Foreign companies are seen as integral to improving India's competencies in military services, just as they are seen to improve competencies in arms production. For example, in February 2011 Tata Industrial Services (part of Tata Group) teamed up with QinetiQ of the UK. The intention of the partnership is for Tata Industrial Services to identify Indian manufacturers and undertake programme management and other related tasks in order for major foreign companies to meet their offset and supply requirements.⁴⁷ At least part of the partnership will focus on military services. India is now a 'home market' for BAE Systems and, through partnerships with Indian companies, provides aerospace software and engineering services.⁴⁸

Indian companies are also forming joint ventures and international partnerships, in particular for the servicing of military aircraft. In 2009 India and Russia renewed their military cooperation commitment for another 10 years in a series of agreements, including one that specifically covers after-sales support for military equipment of Russian origin.⁴⁹ One example of this cooperation is Integrated Helicopter Services, a joint venture between Vectra Group India and Vertolety Rossii. The joint venture, which will commence with civilian aircraft maintenance and expand into military helicopters, will be Vertolety Rossii's first service centre in India.⁵⁰ However, questions remain regarding Russia's overall ability to maintain military aircraft serviceability, which might require India to source equipment from elsewhere. Services would also have to shift to cover that equipment, and this could also include offsets for Indian industry.⁵¹ Another example of foreign partnership in military aircraft service is HAL's agreement with Dassault of France to perform major inspections of Dassault's Mirage 2000 combat aircraft.⁵² HAL is the largest provider of MRO to the

⁴⁶ For this purpose, services are defined as 'maintenance, overhaul, upgradation, life extension, engineering, design, testing of eligible products and related software or quality assurance services . . . and training'. Indian Ministry of Defence (note 32), p. 45.

⁴⁷ 'Tata Industrial Services, QinetiQ tie up for military robotics, UAVs, space exploration', India Defence, 10 Feb. 2011, <<http://www.india-defence.com/reports-5010>>.

⁴⁸ BAE Systems, *Annual Report 2010: Total Performance Across Our Markets* (BAE Systems: London, [2011]), p. 30. Home markets are discussed in Jackson, S. T., 'Arms production', *SIPRI Yearbook 2010*, p. 253fn.

⁴⁹ Anand, 'India, Russia Military Technical Cooperation Agreement to be extended till 2020', *Machinist.in*, 20 Oct. 2009, <http://machinist.in/index.php?option=com_content&task=view&id=2398>; and Kashani, S., 'Military pact with Russia will boost defence capability: India', *Thaindian News*, 8 Dec. 2009, <http://www.thaindian.com/newsportal/world-news/military-pact-with-russia-will-boost-defence-capability-india_10028528.html>.

⁵⁰ Vertolety Rossii, 'Indo-Russian company Integrated Helicopter Services Pvt. Ltd. opens Russian rotorcraft service centre in India', Press release, 7 Feb. 2011, <http://www.rus-helicopters.ru/en/news/index.php?ELEMENT_ID=1874>.

⁵¹ 'Features', *Indian Aviation*, [n.d.], <<http://www.indianaviationnews.com/indian-aviation-archievenews.asp?id=26&NID=260>>.

⁵² Hindustan Aeronautics Ltd, 'Our services', <<http://www.hal-india.com/Overhaul/services.asp>>.

Indian military.⁵³ The increase in military aircraft in India and the required minimum offset of 30 per cent could translate into additional military MRO in India.⁵⁴

Conclusions

India, as with other countries with similar security situations and ambitions, sees the development and maintenance of a domestic arms industry as a way to protect itself while also projecting power and displaying prestige.⁵⁵ Other world powers encourage this perspective when they equate regional influence with military might.⁵⁶ India's attempts to introduce more sophisticated defence technologies have been far less successful than the government and industry had hoped, in part due to an inability to integrate foreign technology transfers into domestic production capacity. In the future, India hopes to expand its military services industry, especially MRO, both through foreign companies establishing themselves in India and through increased sales of services to other countries in the region.

⁵³ PricewaterhouseCoopers and Confederation of Indian Industry (note 39), p. 8.

⁵⁴ Moser, R., von der Gracht, H. and Gnatzy, T., *The Indian Aerospace Industry 2019: An Analysis of the Political, Technological and Economic Conditions* (Supply Chain Management Institute, EBS Business School: Wiesbaden, 2010). On India's combat aircraft procurement plans see chapter 6, section I, in this volume.

⁵⁵ Jackson, S. T., 'Arms production', *SIPRI Yearbook 2011*, pp. 233–34.

⁵⁶ E.g. the United States tends to conflate India's military equipment with added regional security in the Indian Ocean. See US Department of Defense (DOD), *Quadrennial Defense Review Report* (DOD: Washington, DC, Feb. 2010), p. 60.