India-US Defence Deal: Paving the Way for Strategic Collaboration and Atmanirbharta

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President Joseph R. Biden, Jr. and Prime Minister Narendra Modi reaffirmed the United States and India among the world's closest friends, based on a relationship of democracies which is moving forward in the twenty-first century with optimism, ambition, and confidence. The India-US Comprehensive Global and Strategic Partnership is founded on a new level of trust and mutual understanding, and it is enriched by the warm ties of family and friendship that bind our two countries together irrevocably.[i] This state visit forged an even stronger, more varied India-US cooperation that will promote its people's hopes for a bright and successful future based on human rights and shared ideals of democracy, freedom, and the rule of law. The recent state visit has set the stage for an all-encompassing defence alliance, with a significant agreement on the co-production of GE F-414 jet engines for the Tejas Mk 2 Light Combat Aircraft. Both countries relationship is moving from a period of hesitation to a period of trust, to find solutions for emerging geopolitical challenges.

Forging a New Path in Defence Cooperation

A meticulously planned visit paves the way for an all-encompassing defence alliance between Washington and New Delhi. The signing of a major Memorandum of Understanding (MOU) between an American owned General Electric (GE) and state owned Hindustan Aeronautics Limited (HAL) marks a significant step in co-producing GE 414 jet engines for India's Tejas Mk 2 aircraft[ii] and 11 “major manufacturing technologies”. The deal is very important for India as the agreement would allow GE's F414 engine to be manufactured under license in India for the indigenous Light Combat Aircraft (LCA) Tejas Mk2. Only a few countries, including the United States, Russia, the United Kingdom, and France, have mastered the science and metallurgy required to make a combat aircraft engine. Despite its aim for self-sufficiency in numerous vital technologies, including cryogenic rocket engines, India is not on this list. Countries with advanced engine manufacturing expertise for combat aircraft have typically been reluctant to share it. Moreover, the need to deal with the twin crisis along its borders while maintaining strategic autonomy in the evolving international order drives India's quest for self-reliance and technical transformation in the defence industry.[iii] Over the years, India hasn’t seen much success in producing jet engines to power military aircraft. The pursuit began in the 1960s with the HF-24 Marut, the country's first indigenous fighter. Marut has been recognised as the first 'Make in India' fighter plane. Marut was designed to reach supersonic speeds but it could never touch Mach 1 owing to the limited capabilities of its engine, which resulted in Marut's phased out in 1980[iv]. At that time, the Indian aircraft industry was constrained because it lacked the infrastructure and technical foundation needed to effectively manufacture an indigenous fighter. The Marut was not only extensively reliant on imported supplies, but it was also more expensive to produce in India than to import completed aircraft. [v]

In the 1980s, to address the loss of combat aircraft in the Indian Air Force (IAF), the government sanctioned the creation of the multi-role Light Combat Aircraft (LCA) in August 1983. This initiative required a suitable engine to power the LCA, leading to a feasibility study by Aeronautical Development Agency (ADA), Hindustan Aeronautics Limited (HAL), and Gas Turbine Research Establishment (GTRE) in August 1986, evaluating the GTX-37 engine developed by Gas Turbine Research Laboratory. Despite plans for the Kaveri engine's design in 1986 and development, the project faced setbacks, including a mechanical failure of the compressor rotor blade in June 2000, preventing GTRE from providing a suitable engine for the

LCA[vi]. The project is now presented with the option of joining a joint venture with a foreign company to further develop the engine. In the meantime, India opted for American GE-F404 engines for the LCA Tejas Mark-1. For the Tejas Mark-2, the more powerful F414 engines were chosen in 2010, with the first batch arriving by 2014-15 and the rest to be manufactured in India under transfer of technology agreements[vii].The deal faced obstacles due to US domestic legislation and regulatory hindrances, thus, manufacturing remained stagnant for over a decade. However, in 2016, the US recognised India as a 'major defence partner,' enabling sharing of critical military equipment and technology[viii] . India's Strategic Trade Authorization Tier 1 status in 2018[ix] further facilitated military purchases, resulting in over $20 billion in 2020 from near-zero in 2008[x]. Hence, the ground-breaking agreement to produce GE's F414s in India is a significant milestone[xi]. In June 2023, India's Defence Minister Rajnath Singh and US Secretary of Defence Lloyd J Austin III[xii] met in New Delhi to discuss a roadmap for United States-India Defence Industrial collaboration and Initiative on Critical and Emerging Technologies (iCET) [xiii]. This aims to accelerate technical collaboration and co-production in sectors like air combat, ground mobility systems, intelligence, munitions, and more. [xiv] The meeting strengthened defence ties amid China's assertiveness in the region[xv].The inaugural INDUS X Summit, held before Prime Minister Narendra Modi's visit to the USA, provides a critical opportunity for U.S.-India military co-development and co-production, supporting India's defence export goal[xvi].

Challenges and Opportunities

Despite aiming to change the paradigm for cooperation between US and Indian defence sectors, there is a realisation that the US would not give India cutting-edge weaponry. The F414 is not the most advanced engine. The US frontline fighter F-35 uses the Pratt & Whitney F135 engine. American weapon systems also come with a lot of conditions. Nuclear weapons cannot be fitted on US-supplied platforms nor can they be used in a war against US allies. [xvii] It could also threaten India's quest for self-reliance and Atmanirbharta in Defence. Moreover, India will have to balance between two superpowers i.e., US and Russia. Washington expects that the transfer of jet engine technology may wean India off its conventional reliance on Russian weaponry, especially given fears that Russia and China are investigating a larger bilateral agenda.[xviii] Although, the ties with the US are deepening, however, the friendly relations with Russia should continue to prosper as Moscow is still the biggest oil exporter to India. In growing China assertiveness, the deal is very significant for the armed forces as it outperforms the capabilities of the WS-10, a Chinese-made jet engine that is based on the Russian AL-31 series engine that currently powers the SU-30 MKI aircraft.[xix] Given our bitter design experience and lack of necessary skills, a technological partnership with the United States for engines would be significantly preferable. However, a detailed evaluation of the range and depth of technology being transferred, as well as the extent to which HAL would be able to absorb crucial technologies such as special coating and FADEC (Full Automatic Digital Engine Control), would be required.[xx] The mere transfer of products to India doesn't guarantee that India will be able to develop the next round of technology. For say, since the 1960s, India has manufactured and produced MiG-21 fighters, and since the 1990s Su-30MKI planes. However, Russia supplied the majority of the Su-30's key components. India established the Mishra Dhatu Nigam in 1973 to make the critical alloys required, and production began in 1982, however, critical alloy self-sufficiency has not been realised. Therefore, technology transfer requires 'know-how' and 'know-why'.[xxi]

Prospects and Future Collaboration

The India-US defence deal offers a historic opportunity for strategic collaboration and self-reliance. Challenges remain, but both nations can leverage each other's strengths to enhance defence ties. By embracing Atmanirbharta in defence and investing in research and development, India can continue its journey towards becoming a leading force in the global arena while cementing its strategic partnership with the US. GE has offered to provide 80 per cent of the technology for the F414 jet engine, which will be built in collaboration with HAL. India in order to go ahead in future, should focus more on developing its R&D team, as India invests only 0.75 per cent of its GDP on research and development which is even lower than South Africa and Brazil[xxii]. While the US may not share cutting-edge technologies, India's potential as a rising economy and labour-intensive country should be realised.

The deal also resulted in deepening relations with the US that could help India in modernising the Indian military system. The Indian Air Force aims to sustain 42 squadrons (about 756 fighter aircraft) by 2035, with thousands more jet engines to be produced. The USA's long-term investment in India's military market is evident. The jet engine agreement enhances India's maritime assertiveness and mitigates Himalayan threats. The future prospects are good, as the US is aiming to become India's largest arms exporter amidst Russia's involvement in the Ukraine war. The US and India should capitalise on the visit's achievements to conclude a Security of Supply Agreement and Reciprocal Defence Procurement. [xxiii]The former would allow India to request prior delivery of orders with US enterprises, while the latter will foster synergy between the two nations in research, development, and interoperability. These agreements will make it easier to collaborate during unanticipated delays and may open the door to wartime collaboration.

End Notes

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