



Asia Pacific Region Ballistic Missile Defence Scenario 2020 Recommended Approach for India

1. It is possible to divide the world into five theatres (Asia Pacific, Indian Sub Continent, Middle East, Europe and USA) for studying Ballistic Missile Defence (BMD) system

Region BMD System has been analysed. Japan, South Korea, China, Taiwan and Australia have well known BMD programmes in this region. These programmes have evolved distinctly on



development and predicting likely scenario by 2020. Lessons can be drawn from the BMD Study of each of these regions for consideration of Indian Policy Makers. In this paper Asia Pacific

specific threat perception basis. Development approach has also been varied, ranging from indigenous efforts to outright import and joint development. Geo political situation, science and

technology levels, commercial considerations and threats in being have influenced these decisions and are considered relevant for Indian decision making also.

Threat Perception and BMD Scenario 2020

Japan

2. Japan's perceived ballistic missiles threat is mainly from North Korea and China. North Korea has deployed Nodong ballistic missiles capable of reaching Japan, South Korea and US bases throughout the region. These missiles have a range of 500-1300 km. There are 175-200 missiles deployed by North Korea. North Korea continues to develop a new IRBM, Musudan with an estimated range of 2,500-4,000km (capable of reaching Guam and the Aleutian Islands). An additional concern is North Korea's repeated demonstrations of salvo launches. Distance from Pyongyang to Tokyo is approximately 1300 km.

3. China has a wide range of missiles capable of hitting Japan. DF-21 (CSS-5, Mod1) range 2500 km, DF-21A (CSS-5, Mod 2) range 1700 km, DF-21C (CSS-5 Mod 3) range 1500-2,500 km and DF-21D ASBM variant range 1,500 km are prominent among them. Distance between Beijing to Tokyo is approximately 2000 km.

4. Japan has a more advanced BMD system programme in the Asia Pacific Region. Japan partners with the United States to research, develop, and deploy ballistic missile defence

systems, and is one of the most active players in the field of BMD. Japan has deployed a multi-layered missile defence system consisting of three elements.

- (a) Sea-based midcourse missile defence (The Aegis BMD system).
- (b) Ground-based terminal phase missile defence (Patriot Advanced Capabilities-3).
- (c) The new mobile land-based X-band radar.

5. Japan's role in ballistic missile defence began in 1999, when North Korea tested its long-range Taepodong 1 ballistic missile, which flew over Japan and landed into the Pacific Ocean. Since then, Japan has authorized its Defence Forces to shoot down enemy missiles, and has worked closely with the US in the development of BMD systems. In December 2004, the US and Japan signed an agreement allowing for extensive ballistic missile defence cooperation between the two countries, including mutual transfer of related technologies. In December 2005, Japan announced that it would pay up to one half of the cost of the joint missile defence system.

6. Japan is currently working with the US to develop and deploy the Aegis sea-based missile defence system, which features Standard Missile-3 interceptor missiles deployed on Aegis-equipped cruisers and destroyers. Japan has deployed 36 SM-3 missiles between 2007 and

2010 on four Aegis-equipped destroyers: Kongo, Chokai, Myoko, and Kirishima. Japan is likely to install the missile defence system on two new destroyers that are being built in Nagasaki.

7. Japan has deployed 124 Patriot Advanced Capability-3 interceptor missiles. The first 32 interceptors were purchased from the United States, and the remainder domestically produced in Japan. Japan has 24 air defence regions, and requires at least 30 PAC-3s to provide a basic defence of its airspace. The initial Japanese deployment plan includes Tokyo and six other major urban centres, as well as four military bases in Saitama, Shizuoka, Gifu and Fukuoka.

8. Japan has also deployed new mobile X-band radar, designed to detect and track ballistic missiles. The X-band radar operates at a frequency of 10 gigahertz, and provides surveillance, acquisition, tracking, and kill assessment for missile defence systems. The X-band radar will be deployed in the Japanese Air Self-Defense Force's Shariki base in Tsugaru, located in the north-eastern Aomori prefecture. The radar faces the Sea of Japan, and is operated by the US military personnel and civilians.

9. By the year 2020, Japan is likely to have acquired effective ICBM interception capability as well. Joint development with USA is likely to be intensified as Japan has decided to allow the United States to transfer a jointly developed missile defence system to third countries, provided such a transfer contributes to Japan's national security and international peace and

security. The US-Japan partnership is likely to develop a phased adaptive approach model like the European theatre to meet the unique threats and capabilities in Asia Pacific Region. Japan is likely to have partnership with the USA in development of SBIRS (Space Based Infra Red System) and Airborne Laser system which would eventually facilitate an effective boost phase interception of ballistic missiles.

South Korea

10. South Korea articulates its BMD threat mainly from North Korea. North Korea possesses 800 to 1,000 medium to long-range ballistic missiles. North Korea has produced Scud-C, 500km range; Scud-D, 700km range and KN-02, 120km range missiles.

11. South Korea has an improved operational PAC2-2 system with 48 missiles. Currently, South Korea is operating 3 Aegis variants. The first ship of the class, Sejong the Great, the second Aegis destroyer Yulgok Yi land and the third Aegis class destroyer is named Seoae Ryu Sung Ryong (launched in March 2011). South Korea is considering buying more ships of the Sejong the Great class and is also having a confirmed plan to develop and buy a second class of aegis vessel derived from the Chungmugong Yi Sun-shin class destroyer. It does not yet have PAC-3 missiles with full-scale missile interceptor capabilities, but plans to buy them after 2015.

12. The South Korean government has tactfully refused repeated requests from USA to participate in its BMD plans, citing factors such as high cost, opposition from China and a likely political controversy at home. It is working on its own Air and Missile Defence system, with a target completion by 2015. The plan is for a lower-tier defence system for intercepting ballistic missiles at an altitude of up to 100 km. South Korea is also buying Israeli early warning Green Pine radar and developing an Air and Missile Defence-Cell for an effective command and control system.

13. South Korea is developing a simplified version of the Russian S-400 called M-SAM Cheolmae-2 with the help of Almaz. The prime contractor is Samsung Thales, a joint venture between Samsung and Thales. The M-SAM will be composed of an X band multi-function radar vehicle built by Samsung Thales in technical cooperation with Almaz, and fire-control vehicles and transporter erector launchers built by Doosan.

14. By the end of this decade, South Korea is expected to have a mix of American, Russian, Israeli and indigenous operational terminal phase interception system. South Korea is likely to depend more on the US missile defence system for early warning information. South Korea is also likely to participate in US MDA boost phase

interception programme as it would facilitate quick reaction response so vitally needed in the Korean Peninsular conflict scenario.

Taiwan

15. Taiwan's main threat perception is from Chinese missiles. DF 11, range 600 km; DF 15, range 700-900 km and DF 21 variants, range 1500-2500 km from various Chinese bases could target all parts of Taiwan. The PRC military threat to Taiwan has increased dramatically over the years as China has deployed approximately 1500 short- and medium-range ballistic missiles along the Taiwan Strait.

16. Taiwan has deployed long range early warning Surveillance phased array radar similar to the US PAVE PAWS system with two missile warning centres. Taiwan's existing three Patriot batteries have been upgraded. Each battery has eight launchers and one launcher can hold four PAC-2 missiles. Taiwan bought six new PAC-3 missile batteries. One launcher can hold 16 PAC-3 missiles.

17. In foreseeable future, Taiwan is likely to continue to depend upon USA for its defence in general and BMD requirements in particular. Taiwan has an advanced industrial infrastructure. Possibility of its developing own BMD system in future will remain.

China

18. China faces ballistic missile threat mainly from three quarters; USA's Minuteman ICBMs

and Trident SLBMs, India's Agni series missiles and Taiwan's Chuifeng and Chichun missiles.

19. China bought the S-300PMU-1 from Russia and is licensed to manufacture it under the name Hongqi-10 (HQ-10). China was also the first customer of S-300PMU-2 and may be using the S-300V under the name Hongqi HQ-18. China also built an upgraded version of the HQ-10 called the HQ-15 with the maximum range upgraded from 150 km to 200 km. The total number of the S-300PMU/1/2 and HQ-15/18 batteries in PLA is approximately 40 and 60 respectively.

20. The total number of the interceptor missiles is well above 1,600, with about 300 launcher platforms. Five such SAM battalions are deployed around Beijing region, six battalions in Taiwan Strait region and rest in other major cities like Shanghai, Chengdu and Dalian. An export version of the S-400, designated the HQ-19, was developed jointly by Russia and China. China provided the majority of the funding for development. China has expressed its interest in buying S-400 systems from Russia also.

21. China has invested heavily in the development of S-400 System export version. This is a formidable system incorporating state of the art technology. China is therefore likely to indigenise and mass produce this system for its future area defence need. China is unlikely to

harbour global BMD ambitions like the USA in near future due mainly to technological limitations.

Australia

22. Australia has not articulated its ballistic missile threat in open domain. Chinese DF-31 (CSS-10 Mod 1) range 7250 km; DF-31A (CSS-10 Mod 2) range 11270 km and Julang-2 (SLBM), range 7400 km could be considered as threat in being. The Taepodong 1 and 2 of North Korea which are under development could also pose a threat in future. Distance between Beijing and Canberra is approximately 9000 km.

23. Australia has begun to acquire various weapons and technological equipment for installation on warships in order to be part of the Aegis BMD. There is evidence that these systems will be installed on its new Hobart class destroyer, three of which are under construction.

Recommended Approach for India

24. India faces a multiple threat from HATF series ballistic missile of Pakistan and DF series ballistic missiles of china. These missiles (short range to ICBMs) at shorter range provide very less reaction time and at intercontinental range very high approach speed requiring diverse interception capability much of which is beyond the already acquired or near future planned technological attainments. SLBM threat from Chinese Julang 2 complicates the matter further. India therefore may have to resort to multiple

options like Japan, South Korea and China where in addition to indigenous development, import with technology transfer and joint development may form part of its strategy for developing a credible response encompassing entire range of threat.

Indigenous Development

25. Indigenous development for an area defence system is already underway. Command and Control integration with the existing air defence system is required to be developed. India is likely to have an operational BMD system around Delhi and Mumbai by 2015. Necessity of a seaborne system will always be felt for a flexible response. Indigenous efforts for development of such a system are also under progress. India will have to grapple with countering the ICBM/SLBM threat as well. India's missile development expertise will be useful for developing a suitable interceptor comparable to the US Standard Missile block IIA for neutralising ICBM/SLBM threat but may take a long time.

Import with Technology Transfer

26. Aegis system of the USA is a mature state of the art BMD system. Import of some of these systems preferably with transfer of technology would enable India to provide a flexible response to the emerging threats. Similarly, short distance BMD requirements can be met by systems such as Iron Dome of Israel.

Joint Development

27. Boost Phase interception system is considered most effective and suitable for emerging threats with little reaction time. SBIRS (Space Based Infra Red System) for detection and Airborne Laser for interception are likely to be most suitable when fully developed and operationalised. USA is doing pioneering work in this field. India has also commenced research work on airborne laser. Similarly, BMS (Battlefield management System) is another area where Indian expertise in software development could be complementary to the US System. There is thus a scope for joint development of these systems by India and the USA.

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