

# Information Security and Defence

The Indian Defence service is the 4<sup>th</sup> largest in the world. India is linked to its neighbors by land, sea and air. Hence, Indian Defence has Army, Navy and Airforce apart from strategic command. We also have air defence command. The three services are headed by their Army, Navy and Air Chiefs with Chief of Defence Services (CDS) above all of them to take a holistic view of any situation that arises. There are two more departments under the same Defence minister for Defence R&D and Defence production. In addition, defence is supported by other services like Border Roads Organization and other paramilitary forces.

We are the third largest in defence expenditure with about 75 billion now. which is bound to increase in the years to come. Nearly 70% of this expenditure was for import, but now the policy of 'Atma Nirbar' and the condition that 65 % of the above expenditure should be within the country, has brought a remarkable change in the services procurement pattern. With the new policy the approach of the services has changed and they are encouraging indigenous R&D. The production of the defence equipment is also encouraged to be done in the private industries other than the public sectors. Even the 25% of the defence R&D budget is allotted for private sector and most of the activities of ISRO is getting privatized.

Our country is large, with difficult hilly terrains, and lengthy sea coasts area to be protected. Resources are limited and critical infrastructure are to be developed in parallel. Under these situations we must have a robust plan, both short and long term, to achieve our goals.

Under these circumstances what should India aim for in another 25 years?

**Information Security:** Over the years enough of information has been collected and they are available in the form of written records. Should it be digitized for easy decimation of knowledge or left in the paper form to keep the security high. Is our semiconductors are safe? Should we have our own secured chip set designed and fabricated within the country?

**Conventional war:** Though time tested, conventional war has its own disadvantages. Therefore, will it exist or totally stopped? Or this will continue as long as physical territory to be conquered?

**Cyber war:** The cyber war seems to be more effective in attracting common man if the attack is on the civilian sector (like bank, railway booking, medical establishments, air bookings, telephone or internet interruption) which are easy and therefore vulnerable. On the other hand, if any military or strategic establishments are attacked then the implications may be significant but impact on the common people directly will be more of propaganda than any direct effect. Therefore, will this be only for strategic strike to warn or for affecting all people? If it is an open attack on common people, then, what are the ramification of that?

**Chemical war:** Even though a widely prevalent weapon of the past years was chemicals, most of the countries discontinued using this because it had most cruel effect on the people who got affected. It is easy to produce and many countries have this weapon. It is known that now only antisocial elements use this weapon but will it be totally eliminated?

**Nuclear war:** This is a strategic weapon and only limited countries have them. The effect is huge and the impact will last longer. Not only the people but the entire environment gets affected and hence the affects inhabitation for years to come. Will this continue well beyond the cold war scenario? Will it be in the hands of antisocial elements too if not handled with care? Production and preserving will be a very costly affair. Maintenance of secured information about these weapons and passing the code when needed reliably and secretly is a tough task. Can be handled only by government organization.?

**Biological war:** Unlike other weapons, for biological weapon there are no standards and regulations internationally. After experiencing a pandemic like corona, should this weapon be regulated. Can it be made to affect the targeted group without letting go uncontrollably. Every country is working at least to protect themselves from the biological weapons. Will this most devastating weapon to be continued? Is it possible to have the specific antidotes for the new and emerging biological weapons to contain the effect?

**Technology as Driver:** Irrespective of the size and manpower, the super power status given to those who are capable of having defence technology. Those countries who have mastered technologies like the nuclear bombs or hypersonic missiles are called the super powers.

**Drones and unmanned vehicles:** Currently drone and unmanned vehicles are in vogue. Fighting from the drawing room is the concept. This requires several technologies to work together.

**Under the sea manned and unmanned submarines:** As human lives are precious, more difficult but strategically important tasks are done through unmanned systems. But giving command and control for an unmanned, under water vehicle in the sea is difficult. Hence research for long distance communication through ultra-low frequencies of optical means are to be tried. Powering these under water vehicles are another challenge to be studied. It is possible to have under water cities to cater all these needs research done in these areas.

**High altitude lab Changala pass:** World's highest altitude lab (according to Guinness book of records) is in Changala pass built and operated by DRDO. Should this be enhanced and opened for academic research to exploit its potential?

**Bio Fuel:** Bio fuel developed by DRDO was used in some speed boats of navy for demonstration. But these are to be made commercially viable by using bio waste and improving the process. Should this be given importance?

**Fuel Cell:** The modern submarines are of three categories one using secondary cell which are to be recharged on a daily basis which means the vessel has to surface every 24 hours which makes it vulnerable. On the other hand, fuel cells are nothing but primary cells which can hold under water for two weeks and then we have to fuel them. The last is to have a nuclear submarine can stay under water for even six months. Should we create under water station to fuel cells to extend the stay for longer?

**Star Wars:** Space is exploited for many things including wars. Will there be Star Wars? Is it a viable and right approach for humans? What should be our approach in this direction?

**Photonics and Digital:** With the onset of photonics and quantum will digital fade in defence? What will be contribution of QKD and photonic or quantum radars?

**Managerial and decision Making:** Should the decision for Capex be decided centrally at CDS or Chiefs level? What should be the role of bureaucracy in this decision and why there are many examples indicating policy paralysis and how do we overcome that? Should the decision-making process be purely left to the services as a collective decision involving academics and industry? Are we using the offset policy effectively? Can we promote export of defence goods with government control? What should be under government totally and what should be with private?

**Goco Model:** The defence projects and the infrastructure requirements cannot be funded privately but efficiency of private cannot be obtained in government set up. A via media approach of Government owned and company operated infrastructure be created?

**Funding:** The defence expenditure is huge and effective use is essence of saving for the nation. While improving the effective spending by the concerned authorities, there is no assurance of continuous flow of funds. Year on year budget is allocated but flow of fund may not be as expected leaving uncertainty and consequent delays in decision making. Why not long term or overlapping funding be done for Capex at least?

**Defence attachment for youth:** Countries like Israel has a practice of attaching youth to the services for a short term of two to three years. This not only improves their ability but also improves their feel for the nation and awareness on defence matters. Will it be of any improvement if those who would want to be in services are selected only from the list of youth who have served the services for some years. By this process both sides will know each other better, before the commitment is made.

**Academia Involvement in defence:** It is known that the nations where the coupling between the academia and the defence is strong are able to be strong in technology thereby making them super power. What should be done to improve this relationship? Should all selected for services mandatorily spend time in an academic institution to learn technology as the wars are technology driven? Likewise, should there be incentive to academicians to come on sabbatical to defence establishments to discuss various defence technologies.

**Conclusion:** Any nation needs (defence) power to get peace! Therefore, innovation is a must. Israel's economy is flourishing by the defence technology that they have exhibited to the world so far. Israel though a small nation is able to show supremacy in defence technology merely by their innovation through the start-ups. The book entitled, 'Start up nation', on Israel vividly talks of their aggressive approach on innovation through start-ups. So, it is strongly felt that the innovation through start-ups may be the only way for India to be a super power in defence! Unfortunately, the current system is such that we do not take chances with start-ups of this country, but go only with 'experienced', biggies of abroad!