

Tue, 16 Jan, 2018

## City-based firm to make advanced fuses for Navy torpedoes

By Vijay Mohan



*DRDO Chairman Dr S Christopher (left) and TBRL Director Dr Manjit Singh (centre) give a sample of fuse for torpedoes to Vikram Sehgal of Micron Systems Private Limited in Chandigarh on Monday.  
Tribune photo*

Terminal Ballistics Research Laboratory (TBRL) has developed advanced smart fuses for torpedoes used by the Navy, which will now be commercially produced by a Chandigarh-based private firm.

Christened 'Exploder Mechanism for Heavy Torpedo Varunastra Naval Warhead', the fuse is meant to initiate underwater detonations while preventing inadvertent or accidental detonation during transit. It will replace the existing imported fuses that are at presently being used by the Navy. Varunastra is a heavy anti-submarine torpedo with a warhead of 250 kg and a range of 40 km.

The TBRL, an establishment under the Defence Research and Development Organisation (DRDO), had started work on this project in 2014 and the exploder mechanism is the first-of-its-kind to be produced in the country, a scientist associated with the project said.

“The mechanism is an underwater fusing system designed to initiate the detonation of a torpedo warhead on impact with the target or in the target’s desired proximity,” the scientist said. “It also gives the operators surety that the warhead will detonate only when desired, which provides a higher safety level when kept on board ships or submarines,” he added.

The technology for its production was transferred to Micron Systems Private Limited and the associated documents were received by its managing director Vikram Sehgal from the Chairman, DRDO, and the Secretary, Department of Defence Research and Development, Dr S Christopher during the TBRL’s 57th Raising Day function here today.

<http://www.tribuneindia.com/news/chandigarh/city-based-firm-to-make-advanced-fuses-for-navy-torpedoes/529267.html>

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# THE TIMES OF INDIA

Wed, 17 Jan, 2018

## 13 yrs after request, Army to get 1.6 lakh rifles, carbines

*Govt Speeds up ₹3,547cr Buy for Frontline Troops*

*By Rajat.Pandit*

New Delhi: Thirteen years after the Army first asked for new-generation assault rifles and close-quarter battle (CQB) carbines, there is finally some hope for humble infantry soldiers. At least for the ones deployed on the borders with China and Pakistan.

The Nirmala Sitharaman-led defence acquisitions council (DAC) cleared the fast-track procurement

(FTP) of 72,400 assault rifles and 93,895 carbines for Rs 3,547 crore from the global market on Tuesday.

These limited emergency purchases, which come after repeated scrapping of projects due to graft allegations or unrealistic technical parameters as well as a woeful lack of indigenous options for well over a decade, are to be

INFANTRY: QUEEN OF THE BATTLE	WHAT ARMY NEEDS
<ul style="list-style-type: none"> <li>➤ Infantry (4.8 lakh soldiers) is the Army's largest arm</li> <li>➤ 382 infantry battalions (each with 800 soldiers) &amp; 63 Rashtriya Rifles (counter-insurgency) units</li> <li>➤ Majority of Infantry's 23 regiments (with several battalions under them) are 'Single-Class' ones like Sikh, Gorkha, Dogra, Garhwal, Jat &amp; the like</li> <li>➤ 'Mixed' or 'Fixed' class units like Grenadiers or Mahar Regiment</li> <li>➤ 'All India-All Class' regiments, like Brigade of Guards, raised after Independence</li> </ul>	<ul style="list-style-type: none"> <li>➤ 7,68,496 new-generation Assault Rifles (Another 50,035 rifles for Navy &amp; IAF)</li> <li>➤ 3,76,680 close-quarter battle (CQB) carbines (Another 41,655 carbines for Navy &amp; IAF)</li> <li>➤ 41,005 light machine guns (Another 2,727 LMGs for Navy and IAF)</li> <li>➤ 5,679 Sniper Rifles</li> <li>➤ Over 3.53 lakh new bullet-proof jackets (50,000 ordered in 2016-17)</li> <li>➤ Mini-UAVs, 3rd-generation anti-tank guided missiles, night-fighting devices etc</li> </ul>

Indian Army  
**3rd largest in world**  
(41,162 officers & 11.6 lakh soldiers)



subsequently followed by separate, larger ‘Make in India’ projects.

The DAC also simplified guidelines to encourage participation of the private sector in design and production of weapon systems to bolster the floundering domestic defence-industrial base.

No major ‘Make in India’ project has actually kicked off in the last three-four years, with at least six mega projects worth over Rs 3.5 lakh crore stuck without actual contracts being inked, as was earlier reported by TOI. “The MoD will now accept suo motu proposals from the industry, while allowing startups to develop military equipment. The minimum qualifications to participate in defence projects have also been relaxed by removing conditions related to credit rating and reducing the financial net worth required,” an official said.

All vendors meeting the relaxed criteria will be allowed to participate in the prototype development process instead of the earlier restriction on only two shortlisted companies.

Army chief General Bipin Rawat also acknowledges his entire force cannot be equipped with top-notch weapons. “The hi-tech rifles, for instance, will be only for infantry battalions deployed on the front. The bulk will have to come through the indigenous route, ordnance factories or private industry,” he said.



Wed, 17 Jan, 2018

## Govt. ends dual pension benefits payments

In a major move, the State government has decided to streamline social security and welfare pensions under which a pensioner will be eligible to receive only one pension at a monthly rate of Rs.1,000. Future pension amounts will be paid after verification using with Aadhaar particulars.

Members of welfare fund boards who are getting pension exclusively from the provision of beneficiary contributions and those who are enjoying disability pension will be eligible for more than one pension. Pensioners eligible for second pension such as Indira Gandhi National Old Age Pension and Indira Gandhi National Widow Pension will be paid only the Central government share in the pension concerned. Since the number of membership to any beneficiary in the welfare fund board is limited to only one, the members will be eligible to receive pension from only one welfare fund board, according to a government order issued here on Tuesday.

In the case of those who are in receipt of two pensions at present, the rate of one pension will be at the enhanced rate of Rs.1,000. The second pension will be given at the rate at which the pension amount was disbursed before the enhancement of the minimum pension, which was hiked to Rs.1,000 in the revised budget presented after the new government assumed office.

In order to soften the possible resistance from beneficiaries and to avoid possible controversy, the State government has incorporated the new eligibility norms in the order announcing the scheme for DBT (direct benefit transfer) through banks. Political parties have been accused of inducting more and more beneficiaries in various schemes to create a vote bank. The order on ending dual pensions will help plug one major fund leak.

According to sources, over Rs.3,200 crore of welfare and social security pensions will be paid from August 22 as per last week's Cabinet decision. The backlog in pension payments would also be cleared. In some cases, the backlog is almost 10 months. In such cases, the beneficiaries would get a sum of Rs.10,000, including the arrears, sources said.

The Information Kerala Mission (IKM) will create a comprehensive database and incorporate all the details available with various welfare agencies and government departments. Later, IKM will publish a consolidated list of beneficiaries, sources said.



Wed, 17 Jan, 2018

## An app for Army veterans' healthcare

*Ex-servicemen can now book online appointments with doctors, physiotherapists*

A mobile application for scheduling Ex-servicemen Contributory Health Scheme (ECHS) appointment in Telangana and Andhra Sub-Area — TASAECCHS — was launched by Major General N. Srinivas Rao,

General Officer Commanding (GOC), Telangana and Andhra Sub-Area (TASA) along with Lieutenant General Paramjit Singh, Commandant, MCEME on Tuesday.

The app allows veterans to book online appointment with doctors/physiotherapists of all ECHS polyclinics in Telangana and Andhra Pradesh. It also enables them to endorse their feedback as grievances or suggestions.

**Novel initiative** - The initiative is a first of its kind in the organisation with the app available on Android phones and can be accessible on [www.tasaechs.in](http://www.tasaechs.in). Director ECHS Colonel Anil Kumar explained that the project has a vast scope and the first phase is the launch of appointment booking application.

Soon, Centralised Information Management System and Integrated Medicine Inventory Management System would also be added to enhance efficiency, transparency and optimum utilisation of resources. Senior Army officers and ex-servicemen attended the launching ceremony at MCEME auditorium.

Later, Major General N. Srinivas Rao, Brigadier M.D. Upadhyay along with their spouses visited Military Hospital, Secunderabad, and distributed sweets to the patients and wished them speedy recovery. Brigadier Vivekanand, Commandant, Military Hospital, accompanied them.

In another programme, a wreath-laying ceremony was held at the Bison Division War Memorial by Secunderabad Military Station to commemorate the 70th Army Day on January 15. Maj. Gen. B.D. Rai, GOC, Bison Division, Maj. Gen. T.S.A. Narayanan, Deputy Commandant, MCEME, Brigadier M.D. Upadhyay, Deputy GOC, TASA and Lt. Col. K.R. Rao (retd) paid obeisance to martyrs and laid wreaths in remembrance and honour of all those who made the supreme sacrifice for the country in the line of duty.



*Wed, 17 Jan, 2018*

## **Oceanic struggles**

*By Prasenjit Chowdhury*

In his book, *Destined for War: Can America and China escape Thucydides's trap?* Graham Allison documents how a few years before the outbreak of World War I, Winston Churchill had initiated an effort “to maintain British naval supremacy, simultaneously making bold diplomatic strokes to broker détente with Germany and seizing every advantage should war come”.

He could anticipate that the German surge in the sea implied a national security challenge as well as an ‘existential threat’ to Britain’s survival. Churchill knew that on British warships “floated the might, majesty, dominion, and power of the British Empire.” If its navy was destroyed, he wrote later, the empire “would dissolve like a dream and all of Europe would pass into the iron grip and rule of the Teuton and of all that the Teutonic system meant.”

In 1890, an American naval strategist, Captain Alfred T. Mahan, published *The Influence of Sea Power upon History*. He mentioned Britain as his foremost example, and identified naval strength as the main determinant of great-power success, indeed the key to military triumph, colonies, and wealth. The oceanic voyages of European sailors brought about certain fundamental changes in world trade and power politics in the 16th century.

The Portuguese played a leading role in the initial voyages of exploration; they established bases in Africa, Brazil, and India, and reached as far as Japan by the 1540s.

Naval superiority is in the reckoning again as a form of power-play. China’s objective is to secure naval supremacy in the western Pacific from the Japanese archipelago to Guam Island and Indonesia. Indeed, it intends to compete with US naval forces in the Indian Ocean and in the entire Pacific region. According to Pentagon analysts, China’s naval buildup is the most unsettling in view of the “breakneck speed” with which it

seeks to develop a “blue water Navy” capable of challenging the US Navy. It intends to push US aircraft carrier fleets out of the Western Pacific ~ and perhaps finally ‘take’ Taiwan ~ and ultimately project “hard power” across the globe.

India seeks to project its power through the Strait of Malacca and thence the Western Pacific, with the objective to ensure the security of the Indian Ocean as its own region, and then project its power into the Western Pacific region. This would be an attempt to counter China’s emphasis on regional hegemony and will inevitably clash with China’s projected circle of influence.

By pursuing the Southern Forwarding Strategy, the Indian navy has been expanding its operations eastwards into the South China Sea.

It seeks to develop long-range naval operations and exert control over five strategic channels ~ the Suez Canal, the Bab el Mandeb, the Strait of Hormuz, the Strait of Malacca, and the Sunda Strait.

The problem is that China has as much threat perception about Japan and India, as India and Japan have about China. Beijing overlooks four major powers with which it has fought wars or proxy battles over the past 75 years ~ Japan, India, Russia, and the US, not to ignore its tiff with smaller neighbours, including Vietnam and South Korea, besides the volatile presence of North Korea and Pakistan two unstable nuclear powers.

China harbours deep distrust about the military bases and alliances that the US maintains around its periphery and is especially wary of the fact that US ships and aircraft operate and engage in surveillance nearby, all of which account for its determination to field a modern and much larger navy, advanced weaponry, and sophisticated cyberwarfare capabilities.

To counter this trend, the Indian navy has put in place a policy of stricter vigilance and regional cooperation by upgrading its surveillance and naval capacity since the 1980s. For India, the security of sea traffic through the Malacca Strait is vital from an economic point of view. A ship has been deployed permanently in the Andaman Sea and the approaches to the Malacca Strait. The ingress and egress routes of the Indian Ocean region are also under surveillance.

Joint exercises with Australia, Japan, Singapore and the US in an operational zone stretching across to the Andaman and Nicobar Islands near the western entrance to the Malacca Strait have been effective for quite some time. In 2005, India and the US signed a Framework Agreement on Defence Relations, followed by the announcement of a bilateral Framework for Maritime Security Cooperation in 2006.

In February 2008 was formed a new regional maritime security initiative, called the Indian Ocean Naval Symposium, aimed at providing a consultative forum for ‘Chiefs of Navy’ from states bordering the Indian Ocean region. And with the “Quadrilateral” initiative encompassing Australia, India, Japan and the USA now forming the naval security architecture, the prospect of a large security network spanning the entire Pacific Ocean looks real.

The messages of multilateral naval cooperation, as laid down in the Indian Maritime Doctrine, one of the guiding principles for addressing common security concerns such as protection of sea lanes, terrorism, piracy, drug trafficking and transportation of weapons by sea, are clearly spelt out. This is still more important in view of China’s maritime shenanigans.

India has been strengthening ties and concluding bilateral agreements on military cooperation, including joint military and anti-piracy exercises, with Vietnam, Malaysia and Indonesia alongside South Korea and Japan in the South China Sea and the Indian Ocean. Should India’s plan to attach a carrier group to its Eastern Region and Western Region fleets located in the Andaman Islands materialize, the country’s navy will be able to project its naval power over long stretches.

India’s naval strength, compared to China’s, is hamstrung by a capacity mismatch. If the defence budget of the US is three times as big as China’s, the Chinese defence budget compared to India’s, is thrice as much. Not that the glaring inventory gap is unknown to India’s naval establishment, but it is compounded by the fact that the allocations for the navy hover barely around the 15 per cent level of the overall defence budget.

India's ship-building capacities are way behind China's as the PLA Navy has continued a robust surface combatant construction programme of various classes of ships, including guided-missile destroyers and guided-missile frigates.

Experts mention India's critical capability shortfalls in ship-borne multi-role helicopters, conventional submarines and mine counter-measure vessels. India recently commissioned its first Ballistic Nuclear Submarine, INS Arihant, while its second strategic nuclear submarine, Aridhman is almost ready. But with a fleet of fourteen submarines, the navy can't hold a candle to Chinese submarines with a fleet of over sixty boats and at least ten more in the pipeline.

The shortfall is critical in view of China's subversive power, if one recalls how World War I submarines, though limited in their range, speed, and depth, could do what surface raiders could not.

The original plan for the Navy to have 140 ships of all varieties, one that was envisaged way back in 1948, is yet to be realised. India's objective to develop a truly blue-water navy surely needs to be backed up by more muscle and substance, to lend credence to its Southern Forwarding Strategy commensurate with its rising naval aspirations.

*The writer is a Kolkata-based commentator on politics, development and cultural issues.*



*Wed, 17 Jan, 2018*

## **At first look, India's R&D spend seems up. But it's actually down**

*By Vishwa.Mohan*

**New Delhi:** India's gross research spending has consistently been increasing over the years but the country's expenditure on R&D continues to be less than 1% of its GDP when other emerging economies, including China and Brazil, invest more under this head.

The latest study of the National Science and Technology Management Information System (NSTMIS) under department of science and technology (DST) shows that the country's gross expenditure on R&D has, in fact, tripled in a decade — from Rs 24,117.24 crore in 2004-05 to Rs 85,326.10 crores in 2014-15 — with the government chipping in with more money as compared to private sector industries.

But, the country's R&D expenditure as percentage of its GDP declined during the period. It has, in fact, been showing a consistent decline since 2008-09. The study shows that the Centre's share in the gross expenditure was 45.1% followed by private sector industries (38.1%), state governments (7.4%), higher education sector (3.9%) and public sector industries (5.5%).

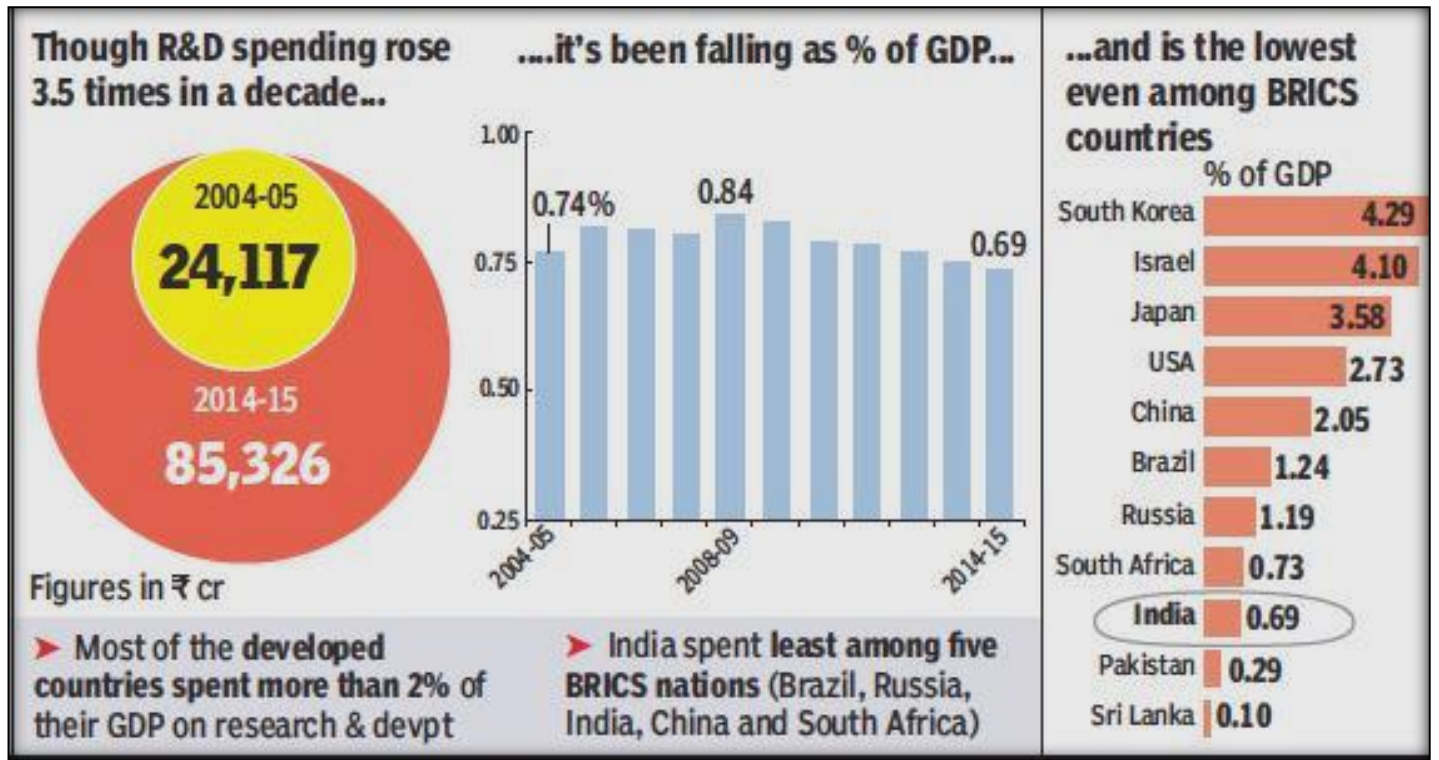
NSTMIS compared the pattern of expenditure in 14 countries, including South Korea, Japan, USA, Russia, Canada, Australia, Germany, France, Italy, Spain, UK, Mexico and China, and found that India topped the list in terms of share of government sector spending. In other countries, private sector industries and institutions of higher education spent more than the government.

"India tops in government spending in R&D with 81.3% (of government sector expenditure) coming from eight major scientific agencies — defence, space, atomic energy, ICAR, CSIR, DST, (department of) biotechnology and ICMR — during 2014-15," tweeted Union science and technology minister Harsh Vardhan while referring to the findings.

The study noted that the public sector R&D was led by defence industries and fuels while private sector one was dominated by drugs, pharmaceutical and transportation during 2014-15.

Though the study restricted itself to India's R&D expenditure till 2014-15, it estimated the expenditure under this head for 2015-16 at Rs 94,516.45 crore and for 2016-17 at Rs 1,04,864.03 crore, which would still account for less than 1% of the GDP.

As compared to India, other BRICS nations had spent more of their GDP on research. Most of the developed countries, in fact, spent more than 2% of their GDP on R&D.



On scientific publication, India has shown a rising trend during the last decade. The report noted that the country's share in global research publications increased from 2.2% in 2000 to 3.7% in 2013.

## जनसत्ता

Wed, 17 Jan, 2018

### राजनीति: अंतरिक्ष में नई संभावनाएं

*अंतरिक्ष कार्यक्रम में भारत ने जैसी उपलब्धियां हासिल की हैं वैसी विज्ञान के अन्य क्षेत्रों में क्यों नहीं हासिल कर पा रहा है? क्यों इसरो एक टापू की तरह नजर आता है? क्या कारण है कि हमारे शोध संस्थानों तथा विश्वविद्यालयों में दोयम दर्जे का अनुसंधान होता है? क्यों हमारे देश में विज्ञान की पढ़ाई-लिखाई का स्तर संतोषजनक नहीं है?*

**लेखक : रवि शंकर**

अंतरिक्ष की दुनिया में भारत ने नया इतिहास रच दिया है। इसरो ने बीते सप्ताह पीएसएलवी-40 सी के जरिए पृथ्वी अवलोकन उपग्रह कार्टोसैट-2 सहित इकतीस उपग्रहों का एक साथ सफल प्रक्षेपण करके एक बार फिर से दुनिया से अपना लोहा मनवाया है। पिछले हफ्ते छोड़े गए उपग्रहों में अमेरिका समेत छह देशों के अट्टाईस उपग्रह शामिल हैं। यह दूसरा मौका है जब इसरो ने एक साथ इतने उपग्रह अंतरिक्ष में भेजे। पिछले साल फरवरी में 104 उपग्रह अंतरिक्ष में भेज कर इसरो ने विश्व कीर्तिमान बनाया था। इनमें ज्यादातर विदेशी उपग्रह थे। कार्टोसैट-2 निश्चित रूप से भारत के लिए एक बड़ी उपलब्धि है क्योंकि पिछले साल अगस्त में पीएसएलवी-सी 39 का मिशन फेल हो गया था। इसके बाद प्रक्षेपण यान पीएसएलवी को फिर से यानी पीएसएलवी-40 तैयार किया गया। यह भारत का सौवां अंतरिक्ष मिशन है। स्पष्ट है, भारत ने पिछले कुछ वर्षों में अंतरिक्ष के क्षेत्र में लंबी छलांग लगाई है। अमेरिका, ब्रिटेन, फ्रांस जैसे दुनिया के ताकतवर देश भी इसरो का लोहा मानते हैं। लेकिन भारत की इस कामयाबी से पाकिस्तान डरा हुआ है। पाकिस्तान का डर स्वाभाविक है क्योंकि अब आसमान से उसकी एक-एक हरकत पर भारत की नजर रहेगी। आतंकवादी और भारत के खिलाफ

अभियान चलाने वाले लोग इस उपग्रह की नजर से बच नहीं पाएंगे। चीन भी चिंतित है। कार्टोसैट-2 के सफल प्रक्षेपण के बाद पाकिस्तान और चीन की प्रतिक्रिया से साफ जाहिर है कि वे अंतरिक्ष में भारत की इस कामयाबी को पचा नहीं पा रहे हैं। इससे यह भी जाहिर है कि कार्टोसैट-2 सुरक्षा के लिहाज से भी काफी अहम है।

एक समय दुनिया भारत को सांप-सपेरों का देश कहती थी, लेकिन आज अंतरिक्ष अनुसंधान में इसरो की शानदार उपलब्धियों के कारण हर कोई हमें सलाम कर रहा है। इसरो ने सफलता के नए-नए अध्याय जोड़े हैं और आज उसकी गिनती दुनिया की सबसे पारंगत अंतरिक्ष एजेंसियों में होती है। यही नहीं, इसरो ने प्रक्षेपण की अपेक्षया सस्ती तकनीक विकसित कर अपने प्रति दुनिया भर में व्यावसायिक आकर्षण भी पैदा किया है। कई देशों की अंतरिक्ष एजेंसियां और कई निजी व सरकारी एजेंसियां इसरो के साथ करार कर चुकी हैं। यानी देश के अंतरिक्ष कार्यक्रम को कामयाबी से चलाने के साथ-साथ इसरो देश के लिए पैसा कमाने में भी जुटा है। आज विकसित देश भी इसरो की सेवाएं लेने लगे हैं। बहरहाल, कार्टोसैट-2 सैटलाइट भारत के लिए बहु-उपयोगी और निगरानी उपग्रह है जिसकी मदद से रक्षा और कृषि क्षेत्र की तत्काल जानकारी मिलेगी। इतना ही नहीं, कार्टोसैट-2 के जरिए तटीय क्षेत्रों और शहरों पर नजर रखी जा सकेगी। या यों कहें यह उपग्रह अंतरिक्ष में भारत की 'आंख' बनेगा और इसके जरिए आसमान से धरती पर नजर रखी जा सकेगी और उच्च गुणवत्ता वाली तस्वीरें भेजी जा सकेंगी।

बता दें कि कार्टोसैट-2 एक रिमोट सेंसिंग उपग्रह है। इस उपग्रह को 'आइ इन द स्काइ' के नाम से भी जाना जाता है। यह भी कह सकते हैं कि भारत के पास एक ऐसा जासूस है जो धरती पर होने वाली गतिविधियों की नजदीक से निगरानी कर सकता है। कार्टोसैट-2 सी श्रृंखला के उपग्रह का पहली बार मुख्य प्रयोग 2016 में सर्जिकल स्ट्राइक के वक्त हुआ था। सेना को नियंत्रण रेखा पर आतंकीयों के लान्च पैड तबाह करने में इस श्रृंखला के उपग्रहसे काफी मदद मिली थी। यानी कार्टोसैट-2 सुरक्षा के लिहाज से भी बहुत महत्वपूर्ण है।

यों तो भारत का अंतरिक्ष अनुसंधान कार्यक्रम आजादी के तुरंत बाद ही शुरू हो गया था। लेकिन इसे गति मिली 1969 में इंडियन स्पेस रिसर्च ऑर्गेनाइजेशन (इसरो) यानी भारतीय अंतरिक्ष अनुसंधान संगठन की स्थापना के साथ। इसके बाद इसरो ने पीछे मुड़ कर नहीं देखा। उसने अंतरिक्ष में छलांग लगाना शुरू किया और साल-दर-साल अनेक देशी और विदेशी उपग्रहों को अंतरिक्ष में पहुंचा कर नई ऊंचाइयां छूता गया। बीच-बीच में इसरो को असफलताएं भी मिलीं, लेकिन ऐसे अनुभव विकसित देशों को भी हुए हैं। दरअसल, उपग्रह प्रक्षेपण के क्षेत्र में इस तरह की नाकामी आम बात मानी जाती है। इसरो की नाकामी की दर काफी कम और सफलता की दर बहुत ऊंची रही है।

दरअसल, इसरो के वैज्ञानिकों ने अपनी भूलों से तो सीखा ही, दूसरों की नाकामियों से भी सीखा और आगे बढ़ते गए। उसी का नतीजा है कि आज भारत अंतरिक्ष में एक बड़ी ताकत बन गया है। इस क्षेत्र में वह अमेरिका, रूस और चीन को टक्कर दे रहा है। साफ है, हर एक सफलता हमें पहले से बड़े लक्ष्य हासिल करने की महत्वाकांक्षा भी देती है। इसरो के साथ भी यही हुआ है। इस संगठन की परियोजनाएं भी बीते कुछ दशक में लगातार बढ़ी तथा और भी महत्वाकांक्षी होती गईं। जाहिर है, इसके सामने चुनौतियां भी कम नहीं रही हैं। उदाहरण के लिए, मंगलयान मिशन। इसरो ने इस मिशन की घोषणा की थी तो किसी को इसकी सफलता पर पक्का यकीन नहीं था। तब तक एशिया में ही तकनीकी रूप से भारत से कहीं ज्यादा उन्नत माने जाने वाले चीन और जापान जैसे देश कोशिश करने के बावजूद मंगल अभियान में सफलता नहीं पा सके थे। चीन का पहला मंगल मिशन यंगहाऊ-1, वर्ष 2011 में असफल हो गया था। इसी तरह 1998 में जापान का मंगल अभियान ईंधन खत्म होने के कारण नाकाम चुका था। मंगल तक पहुंचने की अमेरिका की भी पहली छह कोशिशें नाकाम रही थीं।

बहरहाल, आज तमाम विकसित देश अपने उपग्रहों को इसरो से प्रक्षेपित करवाना फायदेमंद और सुरक्षित मानते हैं। लिहाजा, आने वाले दिनों में इसरो को कई बड़े प्रक्षेपण करने हैं। वर्ष 2018 में इसरो को औसतन हर महीने एक उपग्रह का प्रक्षेपण करना है। इनमें जीएसएलवी मार्क-3 भी शामिल है। जीएसएलवी से अंतरिक्ष संबंधी कारोबार में भारत की भूमिका और मजबूत होगी। उसके दो साल बाद एसएसएलवी श्रृंखला की शुरुआत हो सकती है। चंद्रमा और मंगल ग्रह के लिए भारत के नए अभियान भी इस दौर में शुरू होंगे। इस तरह, इसरो अंतरिक्ष बाजार में बहुत बड़ा खिलाड़ी बनने जा रहा है। इसरो की दो विशेषताएं उसे दुनिया में सबसे अलग अंतरिक्ष एजेंसी बनाती हैं। एक तो उसने बहुत ही कम लागत में अभियान पूरा करने में महारत हासिल कर ली है। उसने चंद्रयान को केवल 386 करोड़ और फिर मंगलयान को केवल 450 करोड़ रुपए में अंतरिक्ष में भेज कर किफायती प्रक्षेपण का उदाहरण पेश किया है।



दूसरी बात यह है कि इसरो की असफलता की दर दूसरी सभी अंतरिक्ष एजेंसियों से काफी कम है। उपग्रह प्रक्षेपण की कम लागत तथा उच्च सफलता दर के कारण सारी दुनिया इसरो की तरफ आकर्षित हो रही है। इसरो के वैज्ञानिकों की प्रतिभा, लगन, उद्यमशीलता और परिश्रम की जितनी तारीफ की जाए, कम होगी। पर अहम सवाल यह है कि अंतरिक्ष कार्यक्रम में भारत ने जैसी उपलब्धियां हासिल की हैं वैसी विज्ञान के अन्य क्षेत्रों में क्यों नहीं हासिल कर पा रहा है? इसरो क्यों एक टापू की तरह नजर आता है? क्या कारण है कि हमारे शोध संस्थानों तथा विश्वविद्यालयों में दायम दर्जे का अनुसंधान होता है? क्यों देश में विज्ञान की पढ़ाई-लिखाई का स्तर संतोषजनक नहीं है? क्यों भारत की झोली में विज्ञान क्षेत्र के नोबेल पुरस्कार नहीं आ रहे हैं? इन सवालों के जवाब तलाशना इसलिए अति आवश्यक है, क्योंकि कोई भी देश विज्ञान तथा टेक्नोलॉजी में पिछड़ कर आर्थिक महाशक्ति बनने का सपना पूरा नहीं कर सकता।