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The Hindu
08 Mar, 2016

Tata to bid for Rs.60,000 cr. combat vehicle order

Competition for the Rs.60,000 crore order for the supply of 2,610 Future Infantry Combat Vehicles (FICV) to the Indian Army has intensified with Tata Motors entering into a strategic agreement with Bharat Forge Ltd. and General Dynamics Land Systems (GDLS) of the U.S. to bid for the project.

Other large Indian companies in the race include Larsen & Toubro and Mahindra & Mahindra. The winning consortium will need to supply these advanced combat vehicles over a period of 25 years.

Tata Motors, which has been supplying combat vehicles to the Indian Army for years, will lead this consortium. Bharat Forge has come on board as a partner while GDLS will bring in its much proven expertise in combat vehicle platforms.

The three partners will bring to the table their respective strengths to make a strong bid for the project, the companies said

“Tata Motors will play on its strength in design, development and integration of mobility platforms while Bharat Forge will bring on board its competence with fighting platforms and manufacturing strengths.

“General Dynamics’ proven expertise as system of systems integrator in various integrational programmes will bring in the required competencies enabling Tata Motors, the lead integrator, to offer a truly indigenous solution for this Make in India programme,” the according to a joint statement issued by them.

Ravi Pisharody, Executive Director, Commercial Vehicles, Tata Motors Ltd. said, “Through this partnership, we will be better positioned to help the country realise its ‘Make in India’ vision for the first completely indigenized combat vehicle, at the same time cater to the opportunities available right here in India.”

Mr.Baba N. Kalyani, Chairman and Managing Director, Bharat Forge, said “Our proposed partnership will constitute an important milestone to help meet the Indian Government’s objectives to strengthen indigenous defence capabilities and particularly in land systems with the FICV.”

Donald Kotchman, Vice President, Tracked Combat Vehicles, General Dynamics Land Systems said, “We have established a track record of delivering and sustaining international programmes in a timely and cost-effective manner throughout the platform’s life. We look forward to working with our consortium partners in supporting the ‘Make in India’ initiative, developing the Indian FICV.”

To be developed under the ‘Make Category’, the FICV is a high mobility armoured battle vehicle for infantry men to keep pace with new advancements in weaponry system.

The FICV will replace the Indian Army's Russian-designed BMP (Sarath BMP-II) series armed vehicles that have been in operation since 1980.

The Times of India
08 Mar, 2016

Each Airbus aircraft partly made in India

Airbus said on Monday each of its aircraft is partly “made in India” as the European aircraft major exceeded the \$500 million annual procurement mark from India in 2015. The group now aims to cross \$2 billion in cumulative sourcing, covering both civil and defence, in five years up to 2020.

Airbus said it has offered to build the C295W military transport aircraft in India along with Tata Advanced Systems and formed a partnership with Mahindra Defence to manufacture military helicopters locally.

“Over 6,000 people at more than 45 suppliers, both public and private, are directly engaged in providing engineering & IT services, aerostructures, detail parts & systems, materials and cabins to the group for several of its leading platforms including A380, A350 XWB, A320 Family, A330, C295W, A400M, Eurofighter, Tiger and NH90....Today, every Airbus commercial aircraft being produced is partly made-in-India,” Airbus said in a statement.

Airbus group India president and MD Pierre de Bausset said, “We are already making in India via our suppliers and this is independent of any offset obligations. If our proposals to produce the C295W military transporter in India together with Tata and military helicopters along with Mahindra materialise, we will help set-up system integration and final assembly lines which will spawn an Indian defence supplier base that will be second to none globally.

“ Hindustan Aeronautics Limited (HAL) makes half of the entire A320 family forward passenger doors produced worldwide. Dynamatic Technologies makes flap track beams for the A320 family on a global single source basis and was given the contract last year to manufacture them for the A330 family. Mahindra Aerospace is on contract from Premium Aerotec, an Airbus Group company, to supply more than a million aero-components per year.

Mail Today
08 Mar, 2016

Indian Army to build makeshift bridge on Yamuna for World Culture Festival

Indian Army is set to construct another pontoon bridge on River Yamuna for the Art of Living Foundations World Culture Festival.

Indian Army is set to construct another pontoon bridge on River Yamuna for the Art of Living Foundation's World Culture Festival. Army officials said "after permission is granted by authorities, it will be obligatory for the defence forces to see that there is no accident." As many as 3.5 lakh people are expected to visit the site near Yamuna.

Senior defence sources said the organisers had approached Defence Minister Manohar Parrikar. They sought six such bridges but the Army was asked to erect one. A second bridge has been erected by the PWD. The Delhi Police has now given a report saying that there is fear of a stampede and hence the Army might build another bridge, sources said, adding that a minister from the Delhi government has also written to the Ministry highlighting the need for such bridges.

The Asian Age
08 Mar, 2016

Push for defence offset

Defence minister Manohar Parrikar (pictured) said investment under the new offset policy is likely to touch \$11-12 billion. “some \$5billion investment has been generated and another \$6-7billion will be coming in soon,” the minister said, at a session on manufacturing. He said Haryana would be the hub for defence and aerospace industry. Assuring the industry, he said, “when something goes wrong in India, the tendency is to tighten rules and genuine people are the ones who suffer from it.”

The Asian Age
08 Mar, 2016

Pacific isle moves ICJ against India, Pak on nuclear arms

The Marshall Islands Monday moved the UN's International Court of Justice in The Hague against India accusing it of failing to halt the nuclear arms race, evoking a sharp reaction from India which has written to the ICJ saying NPT provisions cannot be extended to it as a legal obligation.

The tiny South Pacific state began legal proceedings against India at the United Nations' highest court, as part of cases against three of the world's nuclear powers - India, Pakistan and the UK - in a bid to infuse new life into disarmament negotiations.

"The Republic of the Marshall Islands has instituted proceedings at the ICJ against all nuclear weapon states contending breach of customary law obligations on nuclear disarmament flowing from Article VI of the Non-Proliferation Treaty.

"Government believes that given our consistent and principled position on the NPT, to which India is not a party to, NPT provisions cannot be extended to India as a legal obligation. India has written to the ICJ denying this contention and reiterating India's position of principle on nuclear disarmament," external affairs ministry spokesperson Vikas Swarup said in New Delhi. Hearings of the ICJ in this regard are to take place shortly, he added.

The Marshall Islands filed cases against all nine nations that have declared or are believed to possess nuclear weapons. Cases against Pakistan and Britain will start on Tuesday and Wednesday respectively.

The Hindu
08 Mar, 2016

Buying influence in Washington

America's decision to supply Pakistan with F-16 fighter aircraft, despite protest from India, suggests the effectiveness of lobbying within the ambit of Washington's Beltway politics

A shockwave ripped through South Asian policy circles in mid-February when the U.S. confirmed that lengthy negotiations between Washington and Islamabad had resulted in a decision to supply Pakistan with eight F-16 fighter aircraft worth \$699.04 million, despite a year of unrelenting protest from India.

The deal marked the continuation of standard U.S. policy on Pakistan, namely support for an "ally" in the global fight against terror, including against a myriad of hardcore militant outfits on Pakistani soil.

Yet it reflects a troubling conundrum for India, which is that Washington appears to be unable or unwilling to scale back military transfers to Islamabad despite the available evidence of complicity between the Pakistani Inter-Services Intelligence and various extremist groups.

Unflagging support to an "ally"

With the sale announced a little more than a month after the Pakistan-origin attack in Pathankot, India's ministry of External Affairs immediately summoned U.S. Ambassador Richard Verma to express its "displeasure," and in Washington Republican Senator Bob Corker described vowed to block the sale to the country that is acting as a "duplicious partner" and providing safe havens to terror groups.

Yet even as the Modi administration fumed and as Mr. Corker and other Congressmen dashed off sharply-worded letters to Secretary of State John Kerry, threatening to block U.S. taxpayer funds to support the sale of the jets, the Secretary in his annual budget sent to the U.S. Congress proposed a financial assistance package of \$859.8 million for Pakistan, including \$265 million for military hardware.

In other words an all-too-familiar sub-continental dilemma for India has again resurfaced: On the one hand Osama bin Laden's hideaway villa was discovered in Abbottabad, Pakistani-American Faisal Shahzad attempted to spectacularly car-bomb New York's Times Square, and Haqqani Network terrorists regularly flee to safe havens inside Pakistan after attacking U.S. soldiers in Afghanistan.

On the other, the U.S. readily proffered Kerry-Lugar financing to Pakistan, sold the country around \$5.4 billion worth of military equipment during 2002-14, and is now handing over even more F-16s, beyond the 70 that the Pakistani Air Force has gradually acquired since the 1980s – assuming that Pakistan can pay for the latest fleet of jets.

With what black magic has Pakistan blinded the mandarins of successive U.S. administrations to Islamabad's dark side, and even more, kept them blithely skipping along the path of strategic handouts, all in the name of regional counterterrorism cooperation?

Islamabad's beltway lobbying

Setting aside explanations based on strategic calculus, all of which would in some way return to the central dictum that Washington cannot afford to lose a nuclear-armed Pakistan's goodwill in fighting more dangerous foes, an alternative theory that could partially explain the all-weather nature of this one-way partnership is the effectiveness of Pakistani lobbying within ambit of Washington's beltway politics.

Historically there is perhaps no greater example of the power of lobbying in this context than the stranglehold that the Israel lobby, led by the American-Israel Public Affairs Committee, has had upon the narrative of U.S. policy towards West Asia for decades.

Counting the U.S.'s consistent military, diplomatic and economic support of Israel John Mearsheimer and Stephen Walt argue in their 2006 paper on this subject, "If neither strategic nor moral arguments can account for America's support for Israel... the explanation is the unmatched power of the Israel Lobby."

Similarly Islamabad's peddlers of shadowy influence on Pennsylvania Avenue and Capitol Hill have been a force to reckon with for decades, most notably when, during the term of General Pervez Musharraf a battalion of fleet-footed lobbyist-ninjas rehabilitated Pakistan's reputation on the eve of U.S. President George W. Bush's War on Terror.

Scarcely one month after the 9/11 terror attacks General Musharraf faced cascading pressure from the Bush White House to allow the transit of enormous U.S. military supplies through Pakistan as the campaign to overthrow the Taliban in Afghanistan kicked off in earnest.

But he was not about to issue any carte blanche permissions to Mr. Bush.

Instead Mr. Musharraf quietly enlisted the services of Houston-based Republican Stephen Payne, described as a staunch "Bush supporter" and a member of a firm known as Team Eagle, and signed a \$180,000-a-year contract with that entity on October 13, 2001, according to a government database maintained under the Foreign Agents Registration Act (FARA).

An investigation by *Talking Points Memo* noted that in the contract that Pakistan signed with Team Eagle Islamabad wanted “Meetings with Administration officials and members of congress and/or staff and share with Pakistan the U.S. attitudes and desires regarding the bilateral relationship with Pakistan and assist in bringing U.S. interests together.”

The policy issues they wanted redressed? “Ending U.S. sanctions against Pakistan [and] providing economic assistance on Pakistan's external debt and related trade issues.”

According to the information provided by another firm of Mr. Payne’s, Worldwide Strategies, Team Eagle “Helped Pakistan negotiate a 5-year, \$3 billion dollar aid package from the U.S.,... coordinated the removal of economic and military sanctions imposed on Pakistan under the Clinton Administration [and] secured Pakistan the prestigious ‘Major Non-NATO Ally Status’ including: Japan, Australia, Israel, Egypt.”

Given the most recent developments a notable accomplishment that Mr. Payne’s firm claimed then was, “After intensive coordinated efforts, Pakistan was finally able to purchase F-16 fighter jets (previously cancelled under the Clinton Administration) and secured the delivery of C-130 transport aircrafts, helicopters and night-vision equipment from the U.S. to fulfill Pakistani military requirements.”

Dark side of power corridors

As much as the historical record of the Pakistani lobby in the U.S. reflects creativity and single-minded focus, in equal measure it has allowed itself to be carried too far into the dark side of backroom politicking, with the expected toxic fallout.

Most well-known among these is the case of Syed Ghulam Nabi Fai, a U.S. citizen of Kashmiri origin who was arrested by the Federal Bureau of Investigation in 2011 for clandestinely pushing the cause of the Pakistani government in seeking to influence the U.S. position on the Kashmir issue.

Court documents showed that Mr. Fai received funding to the tune of nearly \$4 million from the ISI and through the Kashmiri American Council, of which he was the Director, he made more than \$20,000 in campaign contributions over two decades.

In complete disregard of the U.S. law prohibiting foreign governments from making donations to American political candidates, these funds were mostly doled out to the National Republican Senatorial Committee and Representative Dan Burton, a staunchly pro-Pakistan Republican from Indiana.

Lobby or perish?

Yet if Pakistan’s lobbying efforts in Washington reflect somewhat unhinged but largely successful multi-decade adventurism, then India’s efforts are clearly lacklustre by comparison and hesitant in tenor.

There is one notable exception to this observation, when the influence of the Indian and Indian-American lobbies engulfed every corridor of the U.S. Congress and animated the Oval Office like never before – in the run up to the signing of the India-U.S. civil nuclear agreement in 2005, between President Bush and Prime Minister Manmohan Singh.

According to disclosures under FARA the Indian government paid two lobbying firms \$60,000 each per month, one being Barbour Griffith and Rogers (BGR), the employer of Robert Blackwill, U.S.

Ambassador to India during 2001-03 and a confirmed backer of India's rise in the 21st-century world order.

The other was pro-Democratic lobby firm Venable LLP, which Dr. Singh reportedly decided to hire "to protect India when the political tide shifted to the Democrats in Congress;" even though in 2008 Venable LLP was replaced by Patton Boggs, a firm headed by Indian-American Anurag Varma.

While the intense lobbying that characterised this inflection point in India-U.S. ties may well have led to the successful passage of the civil nuclear agreement, it was in no small measure a victory owed to the unprecedented personal commitment of the U.S. President and the Indian Prime Minister to see it through to ink on paper.

After this high point, however, with no major "big-bang" policy goals in sight, the focus on lobbies appears to have somewhat blurred on the Indian side.

According to an analysis of Justice Department filings by *Caravan Magazine India* paid Patton Boggs \$350,000 for a six-month contract at least until around 2010.

The Hindu directly accessed the FARA database which suggests that India spent at least \$700,000 per year on another major lobby firm, the Podesta Group, between 2010 and 2015, and on BGR it spent respectively \$700,000 in 2011, \$350,000 in 2010 and \$700,000 in 2005.

However data collected under FARA and the Senate Office of Public Records and reported by the non-partisan Centre for Responsive Politics research group suggests that between 2008 until 2013 India spent \$3.91 million whereas Pakistan spent \$5.15 million.

If there was a price to pay for reining in lobbying expenditure then it may have come in the form of painful but relatively manageable bilateral conflicts breaking out from time to time, whether it was the Khobragade affair that stung India or the MMRCA deal that fell through for the U.S.

Show us the money

Regardless of how useful money and lobbying are in oiling Washington's policy wheels, the limits to lobby-power are reached when it collides with strategic reality, a fact that former senior diplomats who spoke to *The Hindu* acknowledged in the context of the latest F-16 transfer to Pakistan.

Some of them characterised the deal as an inevitable blip within the broader rhythm of the bilateral compact between India and the U.S., but one that was perhaps less likely to cause genuine geopolitical instability in the region than the scaremongers would have us believe.

That bilateral compact is more regularly validated, they argued, by the vast strides that New Delhi and Washington have made together, for example in terms of defence trade and technology transfers. In fact it is in such areas of regular commercial-strategic interest that a myriad of groups can and do play a productive role, including for example, the U.S.-India Business Council, a cross-industry association of companies that regularly lobbies the White House and the U.S. Congress on everything from allowing technology partnerships with India on par with the U.S.'s NATO allies, to more fairness within the U.S.'s sometimes difficult H1-B visa regime.

Seen in this light lobbying through intermediaries in Washington can certainly bring quick wins or stave off tactical setbacks, but ultimately strategic convergence between nations may depend much more on governments rolling up their sleeves and working together to deliver what lofty vision statements have promised.

Mail Today
08 Mar, 2016

Secret Nevada airbase shows up on Google Earth

A shielded Nevada airbase used by government agencies to test unmanned aircraft has shown up on Google Earth.

Area 6, which was once used for underground nuclear testing, is located in Yucca Flat and is part of the Nevada National Security Site, where 1,000 nuclear tests were conducted between 1945 and 1992.

Four tests and six detonations happened in Area 6 according to a report by the US Department of Energy.

Now, the airbase, which has a 5,000-foot runway, houses aircraft tests for federal agencies such as the Department of Defense and that of Homeland Security, the Las Vegas Review-Journal reported.

These agencies use Area 6 to test unmanned aircraft with sensors and away from the public eye - and to avoid being spied on in space, National Nuclear Security Administration spokesman Darwin Morgan told the newspaper.

'We have controlled airspace and that gives them opportunities to test various types of platforms, he said.

'We do a wide variety of work for others - supporting people with sensor development activities. It evolved from the nuclear testing program. We had to have very good sensors to collect data in a split second before they were obliterated.'

The Nevada National Security Site, where Area 6 is located, is run by the National Nuclear Security Administration's field office in the state, who works with other agencies to develop counterterrorism techniques.

This includes testing out equipment to detect radioactive materials. These materials could be used by terrorists to make dirty bombs, which disperse them with conventional explosives.

Based on the length of the runway, Area 6 could be used to test small aircraft such as Predator and Reaper drones, Tim Brown, an imagery analyst at defense information website GlobalSecurity.org, told the Las Vegas Review-Journal.

The area's hangar could house 15 Reapers, he estimated.

Area 6 was built in the 1950s for \$9.6 million and the current runway was added in 2005. It is now surrounded by a large hangar and several smaller buildings.

The Asian Age
08 Mar, 2016

China aims to be a tech power by 2020

China's government has highlighted big data, encryption technology and "core technologies" such as semiconductors as the key elements of its push to grow into a tech powerhouse, according to a new five-year plan released today that envisages the internet as a major source of growth as well as a potential risk.

Even as it highlighted the need to improve internet infrastructure to rural areas and unlock the digital economy's potential, Chinese economic planners called for a more secure and better

managed Web, with enhanced internet control systems, internet security laws and real-name registration policies.

Chinese officials including internet czar Lu Wei have played down concerns over what critics have described as China's expanding Web censorship, saying that it is the Chinese government's sovereign prerogative and a necessary measure to maintain domestic order.

China's development plan calls for a better cybersecurity approval system and more "precise" Web management to "clean up illegal and bad information."

The plan also calls for a multilateral, democratic, transparent and international governance system and active participation in international Internet governance efforts.

Premier Li Keqiang highlighted the promise of the internet, saying today that various traditional sectors, ranging from manufacturing to government to health care, need to connect to the Web and raise their efficiency as part of an overarching national strategy called "Internet Plus."

He vowed to raise research and technology spending to account for 2.5 per cent of gross domestic product in the five years through 2020, which he said would mark a "remarkable achievement."

The five-year plan calls for all families in large cities to have access to 100 megabyte-per-second Internet service and broadband coverage reaching 98 per cent of the population in incorporated villages.

At the same time, Chinese leaders, wary of over-relying on foreign technology, will seek to boost China's homegrown industry and cut down on imports a strategy that has drawn complaints from trade partners like the United States.

Similar to previous years, when Chinese leaders highlighted industries such as e-commerce as a growth focus, the new draft of China's development plan specifically elevated big data and cloud computing, relatively new and promising fields that Chinese industry experts view as not yet cornered by US companies that dominate other parts of the technology market.

The Statesman
08 Mar, 2016

N Korea threatens pre-emptive nuclear strike on South, US

North Korea threatened "indiscriminate" nuclear strikes against South Korea and the US mainland if the two allies push ahead with joint military drills scheduled to begin today.

The threat to carry out what it described as a "preemptive nuclear strike of justice" was made in a statement by the North's powerful National Defence Commission, citing the Supreme Command of the Korean People's Army (KPA).

It came just days after leader Kim Jong-Un ordered the country's nuclear arsenal to be placed on standby for use "at any moment," in response to tough new UN sanctions imposed over the North's fourth nuclear test in January and last month's long-range rocket launch.

Pyongyang has issued dire warnings of nuclear attack in the past, usually during periods of elevated military tensions of the Korean peninsula.

While the North is known to have a small stockpile of nuclear warheads, experts are divided about its ability to mount them on a working missile delivery system.

The national Defence Commission described the annual South Korea-US military exercises as “undisguised nuclear war drills” that threatened the North's national sovereignty, and vowed an all-out offensive in response.

“The indiscriminate nuclear strike... will clearly show those keen on aggression and war, the military mettle of (North Korea),” said the statement published by the North's official KCNA news agency.

Any strike would not just target operational theatres on the Korean peninsula, but also US bases on the mainland and in the rest of the Asia-Pacific region.

“If we push the buttons to annihilate the enemies even right now, all bases of provocations will be reduced to seas in flames and ashes in a moment,” it added.

The annual exercises slated to begin today - called “Foal Eagle” and “Key Resolve” last for weeks and involve tens of thousands of US and South Korean troops.

Pyongyang has long condemned the drills as provocative rehearsals for invasion, while Seoul and Washington insist they are purely defensive in nature.

Deccan Herald
08 Mar, 2016

ISRO to place sixth IRNSS satellite in orbit

Chennai: Going a step closer to installing an indigenous GPS system, Isro scientists will place the sixth navigational satellite IRNSS-1F in orbit on March 10.

The Mission Readiness Review Committee (MRRC) meeting on Monday decided to begin the count-down activities of the PSLV-C32 mission that would carry the satellite to the space, Isro said.

"MRCC meeting was held today. The countdown is expected to take place at 9.30 am from Tuesday", Isro's spokes person Devi Prasad Karnik told Deccan Herald Monday evening.

Stating that the rocket was moved from vehicle assembly building to the second launch pad, the official pointed out that this is the second satellite launch for ISRO in 2016.

PSLV

The 44.4 metre-long PSLV-C32, Isro's most trusted rocket and workhorse launch flight weighing 320 tonne, will carry IRNSS-1F from the Satish Dhawan Space Centre (SDSC) in the island of the Bay of Bengal, about 90 km north of Chennai.

With a life span of 12 years, IRNSS-1F, which will have a lift-off mass of 1425 kg, carries navigation and ranging payload.

The satellite's navigation payload will transmit navigation service signals to the users and operate in L5-band and S-band.

Positioning Service

The IRNSS system, which the satellite is part of, is designed to provide Standard Positioning Service (SPS) and is responsible for navigation parameter generation and transmission, satellite control, ranging and integrity monitoring as well as time keeping.

The PSLV will put IRNSS-1F into a sub geosynchronous transfer orbit with 284 km perigee (nearest point to earth) and 20,657 km apogee (farthest point to earth) with an inclination of 17.86 degree with respect to the equatorial plane.

After the satellite settles in the preliminary orbit, its two solar panels will be deployed automatically in quick succession and the master control facility at Hassan will assume control.

Mail Today
08 Mar, 2016

Science fails to take off in union budget

THE annual Budget exercise catches people's attention mainly for direct and indirect tax proposals because they affect common man and decide if prices of commodities and services will go up or down. The other important component of the Budget is allocation of funds for different sectors or ministries.

This year's highlight was, of course, the rural sector. Several other sectors, however, are disappointed at allocations made for them. Scientific departments are among those affected by lower than expected funding.

The Department of Space, for instance, has been allocated about `6,000 crore. For a scientific agency engaged in critical missions and projects, this kind of money is dismal. It only means that the department, which funds the Indian Space Research Organisation and about a dozen space laboratories under it, can only carry on with ongoing projects. It can't get ambitious with projects which have been in the pipeline for years now.

A number of technology development projects were initiated under the 'manned mission initiatives/Human Space Flight Programme' a few years ago when the department had got `100 crore. Subsequent Budgets had also made some allocations, but this year, no money has been given for this activity.

While it is true that the government is yet to take a political decision about manned space mission as it may cost about `13,000 crore or so, research into technologies needed for such a mission has to be carried out on a continuous basis. ISRO plans to develop a fully autonomous orbital vehicle carrying two or three crew members to about 275 km low earth orbit and their safe return. It has been working on critical technologies required for a human spaceflight programme as pre-project activities. Similarly, the plan to develop a satellite for SAARC countries, announced by the prime minister when visited ISRO, has drawn a blank in this Budget.

Another critical agency, Department of Atomic Energy, engaged in both research and operation of nuclear power plants across the country, will have to contend with marginal increase in its budget from `11,384 crore to `11,682 crore. The Department of Health Research, which funds medical research and supports dozens of national labs across the country, too gets small increase from `1,012 crore to `1,144 crore. The overall health budget too has seen minuscule increase in the outlay, at a time when India needs a push in the health sector. The increase in budget for the Council of Scientific and Industrial Research (CSIR) is just about 4.5 per cent, which is less than the inflation rate. Only Department of Science and Technology (DST) and Department of Biotechnology (DBT) appear to be satisfied with the fund allocation. Overlooking scientific research and mission critical areas like space and atomic energy does not augur well for India. For many years, we have been talking of increasing spending on research and development (R&D) from below one per cent of GDP to about 2 per cent of GDP. At a time when countries like China and South Korea are surging ahead in R&D, underfunding can slow down Indian R&D.

Science is Back in Business, For Now

By Hari Pulakkat

The Indian scientific establishment got increased funds in the budget after a few years of neglect. What does this mean for its future is discussed.

This story begins in the early years of the millennium, when funding for research began to improve steadily in the country. The Indian science establishment had passed the 1990s without adequate funding. So the new millennium started on a sombre note -scientists were grappling with poor infrastructure, low morale, and serious shortage of cutting-edge programmes. The new decade turned out to be different.

Until about 2010, the scientific establishment grew steadily. New institutions were created, attracting a bunch of young scientists from abroad. The research output from India quadrupled, as the funding for research doubled. There were signs that India would make an impact on the global stage in research, and develop competitive research-based industries. Then things turned for the worse again.

Scientific departments did not get real increases during the next four years, and their budgets were cut by 30% twice in successive years in the middle of the financial year. This was compounded by delays in appointments of leaders in major research labs and organisations.

Not surprisingly, morale was low in the scientific community as the budget approached this year. Sure enough, the finance minister's budget speech did not even mention the word science. In the end, however, the budget turned out to be good for the research community, at least in a few select areas.

Funds for no department were cut this year while departments of science and technology, biotechnology space and atomic energy got increases. The Department of Science and Technology (DST), the nodal agency that funds research in the country, got an increase of 17% over last year. While this increase cannot make up for four lost years, technocrats point out that it is enough to fund the programmes that are currently planned. "I do not think that resource will be a constraint this year," says former DST secretary T Ramasamy.

A significant portion of DST's increased funding will go to support research centres and business incubators being built in science and technology institutions. Around 2000 companies are now being incubated in 80 technology business incubators, and DST wants to expand the programme. In addition to financing the research parks, DST is planning to fund the startups as well.

In research, the department is looking to fund high risk projects that will bring high rewards as well. "We want scientists to work on big problems," says DST secretary Ashutosh Sharma.

Similarly, the Department of Biotechnology (DBT) got an increase of 12%. DBT is also keen on developing entrepreneurship, especially in cutting-edge fields like genomics. “The impact of funding can be increased ten times if research is done with partners in other ministries,” says DBT secretary K VijayRaghavan. It is an idea the Prime Minister had been pushing for some time.

There are some examples of the idea being implemented. The Indian Space Research Organisation (ISRO) is working with many ministries on projects that involve the application of space technology. The ₹250-crore Uchatar Avishkar Yojana, a Make in India programme along with industry, will receive 50% funding from the Human Resource Development Ministry, 25% from industry and 25% from other ministries. Many research scientists now expect funding from ministries other than science, although no ministry -with the exception of petroleum and natural gas -has the mechanism to evaluate and fund research projects in their domains.

While scientific departments got 10-15% increases, the Department of Scientific and Industrial Research (DSIR) missed out completely. DSIR funds and manages the Council of Scientific and Industrial Research (CSIR), still the world's largest chain of civilian research laboratories. CSIR is now being pressured to reorient itself as a quasi-commercial organisation, with at least 40% of its budget coming from industry. This thinking is in line with similar organisations in Australia and South Africa, but the value of this reorientation is being questioned in all the three countries.

India has a large number of scientists, but its impact on global research and knowledge economy is low. Developed countries spend more than \$200,000 per researcher a year. Surprisingly, funding in India has now reached this level. Indian investments are 15-20% higher per researcher than China's.

Researchers consider India's research mix particularly healthy. “If India is able to increase science funding maintaining the current share of basic research,” says Satyajit Mayor, director of the National Centre for Biological Sciences in Bengaluru, “it can transform Indian science just like it did in America in the 1940s.” The US President's advisor Vannevar Bush had then transformed American science and economy by increasing support for basic research.

Yet, what the country needs is a big expansion in the number of scientists in the country, say many observers. Successive prime ministers have been talking about increasing India's R&D spending to 2% of GDP, a figure widely agreed to be the minimum to create a knowledge-based economy. China has now reached this level while India's is at about 0.85% of GDP. It may be hard to spend substantially more on existing institutions. “No country has been able to spend 0.2% of its GDP on R&D without having at least 1,200 scientists per million people,” says Ramasami.

India now has only 150 researchers per million people while China has over 1,100 researchers and developed countries have 4,000-6,000 researchers per million people. Observers think that it would be hard for India to build a globally-competitive economy without creating new institutions and researchers. Even Make in India, the current buzzword in the country, will not succeed without investing big in R&D.

National Research Professor RA Mashelkar cites an example about the value of R&D. Foxconn makes the iPhone in China and creates 4.5 million jobs but gets only \$10 a phone while Apple makes \$350 per device. Apple is reaping the benefits of R&D investments not just by the company but also by the government. Good investments on R&D could accelerate Make in India, but lack of investments can slow it down. Says Mashelkar: “We will realise the full value of Make in India only if we invent, develop and make in India.

The Times of India
08 Mar, 2016

Indian science institutes missing woman's touch

Women may not be getting their due at India's top science academies. The country is near the bottom in a ranking of 69 countries based on women's membership at such institutions.

Published in the journal 'Nature' in February, the first such survey reports a drop in the number of women researchers at Indian National Science Academy (INSA) in the past three years. From 15% of all members in 2010, the number fell to 6% in 2013. Of INSA's 864 members in 2013, only 52 were women.

The three-year membership is significant because prestigious academies promote scientific excellence and provide policy support to governments.

The next set of nominations is due this year. “...the (mostly) male academy members nominate and elect colleagues from their established male professional networks that were formed during past decades,” the survey states.

Dr Soumya Swaminathan, director, Indian Council of Medical Education and Research, New Delhi and the only woman head of a government science institution, says, “There could be variations from year to year. We have to see the trend.”

“As the number of researchers declines, the membership will also be affected. Science in India implies male dominance. There are science promotion policies for women, but only on paper,” said Sunita Mishra, principal scientist, analytical instrumentation and nanoscience, Central Scientific Instruments Organisation, Chandigarh. Kanak Lata Dikshit, senior scientist of the department of biotechnology at Panjab University, Chandigarh and an elected fellow at INSA, said, “These posts are through nomination and based on excellence. The reduction can be attributed to family responsibilities and biases during nominations.”

The survey was conducted in 2014 and released in February this year by the members of Inter Academy Partnership (IAP).

Until 2014, INSA had no woman in its 31-member governing body. Other countries have done much better. National Academy of Sciences in the US, and the academies of Switzerland and Sweden, had 47% women members in their governing councils. Cuban academies had 40% women, while Canada and Panama had 38% each. Netherlands had 43%, the UK 40%, and Ireland 36%.

Tech firms seek to entice cloud computing experts

The most important question in tech hiring today has become this: 'Can you handle petabytes?'

Amazon Web Services, a globe-spanning cloud computing network that is part of the online retailing giant Amazon, has rapidly become one of the most powerful forces in technology. It has also become a target for poachers.

Last October, at a conference in Las Vegas with thousands of corporate executives and software developers in attendance, AWS's chief, Andy Jassy, strode before an intentionally poorly disguised image of Lawrence J Ellison, founder and chairman of the Oracle Corp.

Foot-tall words like "bullies," "extorted" and "strong arm" appeared next to Jassy and the image of Ellison. The logo of Oracle, one of the biggest companies in Silicon Valley, was barely crossed out. "Our marketing team needs work on redaction," Jassy joked.

Better cloaked was the reason for his enmity: Oracle had been slow to get into the cloud business, but recently made multiple hiring raids on AWS. Both Oracle and Amazon declined to comment on Jassy's dig.

The hunt for the hard-to-find talent that can build and run the massive data centres behind cloud computing is pitting three generations of companies against one another. Old-guard companies like Oracle, tech's current giants like Amazon and its peers, as well as Bay Area startups are offering big salaries and big perks for cloud computing experts.

On the social media site LinkedIn, for example, there are over 130 engineering positions available at Oracle Seattle. Many of them are the kind of jobs that now pay \$300,000 to \$1 million a year, according Shannon Anderson, who has been recruiting engineers in Seattle and the Bay Area for 25 years.

Seattle and its surrounding towns are a hot spot for this kind of tech talent because they are home to AWS, which runs the biggest cloud computing service, and Microsoft, which has a large cloud business called Azure. Google also has a cloud computing office in the area. So does Facebook.

"Someone working deep inside Amazon is getting five to 20 recruiting offers a day," Anderson said. "Compensation has doubled in five years." For a recruiter, who is typically paid a percentage of a star engineer's compensation, "this is a very good time," she said.

Cloud computing, which powers an increasing number of our devices and services, allows a vast collection of computers - often spread around the world - to operate like one giant machine. These computing clouds are being filled with once unimaginable amounts of data from apps, websites and sensors on all sorts of things. Fast-growing online services like Snapchat run on cloud systems. Apple has its own cloud, as does Facebook. Cloud systems even offer the computing muscle needed for things like artificial intelligence.

As other tech sectors show signs of slowing, cloud services have created unprecedented demand for highly educated engineers and mathematicians who can build and operate these flywheels of data. Instead of asking about the latest computer coding languages or how to make a Web page load faster, the most important question in tech hiring has become: Can you handle petabytes? That is the data in about 13 billion images, or roughly the amount of printed information that would fit in 20 million file cabinets.

In the Bay Area, \$125,000 a year is not an uncommon salary for someone newly out of graduate school with the expertise to do cloud computing work. With five years of experience, \$300,000 along with a range of stock or job opportunities that greatly inflate the value of those paychecks have become the norm.

"It's an aggressive market," said Corey Sanders, director of programme management at Microsoft Azure. "We are all data engineers now, and we can convince people that this is the best place to learn that."

The ability to deal with so much data has also become important to industrial companies like General Electric in figuring out things like jet engine maintenance schedules. GE's pitch to cloud computing experts: We offer a chance to rebuild the industrial world.

In the last three years, GE has hired 1,500 software developers and systems engineers, and trained a similar number of existing employees to work on cloud systems connected to everything from smartphones to wind turbines and jet engines.

"We've hired from every large company, places like Amazon and Google, as well as startups, or out of schools," said William Ruh, the head of GE's cloud business. "We pay well, with attractive benefits, a life and a chance to work on the mission to remake American industry." Still, he said, "I'm totally shocked at how fast compensation is moving up."

For smaller companies, the gold rush is more complicated. In San Francisco's South Park neighbourhood, Tom Chavez runs a company called Krux that scans data from more than 3 billion devices, creating a trove of seven petabytes of information retrieved by several hundred companies. Many of his 160 or so employees are just the kind of people the giants, along with other startups, are looking for.

"LinkedIn or Facebook can offer an engineer with a few years' experience a package close to \$1 million," said Chavez, who co-founded Krux and is its chief executive. "We wanted someone out of Stanford for an internship, and Google offered her an annualised \$180,000 for the summer," or about \$60,000 for three months.

Steep salaries

Facebook also wants employees like the people Chavez has hired. In fact, Vivek Vaidya, a Krux co-founder, calls the steep salaries Krux is compelled to pay "our Facebook tax."

Krux takes up several floors of a brick building at the base of South Park. On the ground floor, development engineers get daily calls asking if they want to jump ship. A nearby team of data scientists gets 20 or more unsolicited emails a week via LinkedIn. Upstairs, Krux's recruiter strives to keep people, even as he looks to take from others.

"I can't compete with a \$50,000 signing bonus from Google, so I focus on the person, what really motivates them," said Cade Garrett, who has recruited about 100 people to Krux.

Besides offering stock options that could be valuable if the company has initial public offering, a fast-growing startup can offer younger engineers a crash course in technology - the kind of training that could one day allow them to start their own companies. "I tell them this isn't the best-paying job, but they have to think about where things are going: Everything they do here is mission critical," Garrett said. "You go to Google, you can't be sure that in a couple of years you'll have a product to show."

Chavez thinks industry titans like Larry Page, the chief executive of the Alphabet holding company that includes Google, are intentionally driving up salaries. "If I was Larry, I'd do the same thing: Throw a few more million at people and cut off everyone else's oxygen."

Even so, Garrett tries to keep engineers' contact information off the Krux websites to foil recruiters. And he is more than happy to do his own poaching. Zenefits, a fast-growing online employee-benefits company currently reeling from the departure of its founding chief and a round of layoffs, is a target. "Absolutely, I'll call into any company that is in trouble," he said.

Mail Today
08 Mar, 2016

US doublespeak on climate change

It seems all the big talk of working together to make a transition to lowcarbon future — made during the Paris climate summit — was all words. For more than two decades now, developing countries have been seeking technology and additional funding to help them take the low-carbon growth trajectory, but there has been no agreement forthcoming on these two issues. When developing countries are trying to push renewable energy sources on their own, the least they expect from the rich is that that they will not become a hindrance. But that's what America seems to be doing. It has complained to the World Trade Organisation (WTO) against India's National Solar Mission, saying the clause about domestic procurement violates trade rules. A panel of the WTO has ruled in favour of the US.

The US complained that India's National Solar Mission violates trade rules which feels that the Indian clause — Domestic Content Requirement — will prevent American solar companies from grabbing a share of the large Indian market. India has argued that the clause is necessary for India to develop capabilities in solar manufacturing and to be able to withstand short supplies from imports. The American stand is surprising because the practice of protecting local manufacturers is prevalent in the US, in the form of LCR or local content requirement.

A panel of WTO has ruled in favour of the United States. India's national solar mission envisages achieving a renewable energy target of 175 GW by 2022 with 100 GW coming from the national solar mission. India has also launched International Solar Alliance to promote research on solar energy in hot countries.

Deccan Herald
08 Mar, 2016

New 'meta-skin' to cloak objects from radars

Washington, PTI: Scientists have developed a new flexible, stretchable and tunable "meta-skin" that can protect objects from radar detection, and may help develop next generation of stealth aircraft or even invisibility cloaks.

The meta-skin takes its name from metamaterials, which are composites that have properties not found in nature and that can manipulate electromagnetic waves.

By stretching and flexing the polymer meta-skin, it can be tuned to reduce the reflection of a wide range of radar frequencies.

"It is believed that the present meta-skin technology will find many applications in electromagnetic frequency tuning, shielding and scattering suppression," said researchers from Iowa State University.

The researchers wanted to prove that electromagnetic waves - perhaps even the shorter wavelengths of visible light - can be suppressed with flexible, tunable liquid-metal technologies.

They came up with rows of split ring resonators embedded inside layers of silicone sheets. The electric resonators are filled with galinstan, a metal alloy that is liquid at room temperature and less toxic than other liquid metals such as mercury.

Those resonators are small rings with an outer radius of 2.5 millimetres and a thickness of half a millimetre. They have a 1 millimetre gap, essentially creating a small, curved segment of liquid wire.

The rings create electric inductors and the gaps create electric capacitors. Together they create a resonator that can trap and suppress radar waves at a certain frequency.

Stretching the meta-skin changes the size of the liquid metal rings inside and changes the frequency the devices suppress.

Tests showed radar suppression was about 75 per cent in the frequency range of 8 to 10 gigahertz, researchers said.

When objects are wrapped in the meta-skin, the radar waves are suppressed in all incident directions and observation angles. The meta-skin could in future coat the surface of the next generation of stealth aircraft, said lead author Jiming Song, professor at Iowa University.

The researchers are even hoping to develop a cloak of invisibility.

Mail Today
08 Mar, 2016

Compound to help in recovery following brain hemorrhage

Scientists have identified a compound that helps improve recovery following brain hemorrhage. It does so by blocking iron-containing enzymes in the brain instead of blocking all free iron released from burst of blood vessels. Studies on animals have proved to be successful with this compound named adaptaquin.

Compounds that bind to iron and remove it from the body have been shown to protect the brain during bleeding but they can have side effects as they can also bind to iron in other parts of the brain where healthy cells need it to survive. Rajiv R Ratan and K Saravanan, researchers at Burke Medical Research Institute, say that more work needs to be done to develop adaptaquin as potential treatment for brain bleeding.

HOW WE EVOLVED

Scientists have found a common ancestral gene that helped life on our planet grow beyond bacterial slime

THE EVOLUTION GENE

This gene is found in every complex organism

It encodes a large group of enzymes called protein kinases that helps cells become larger by transferring information from one to another

If this gene did not duplicate or mutate, evolution would not have taken place, the researchers said

GROWTH OF LIFE

Plants and animals are made up of eukaryotic cells

These cells contain hundreds of organelles that perform diverse functions to keep organisms living — just like organs do for the human body

The new research identified the gene that caused the interaction between cells, allowing them to transmit signals, become more complex and come together to form larger organisms, ultimately paving the way for evolution of intelligent life

WHY THIS FINDING IS RELEVANT

More than 400 human diseases, such as cancer and diabetes, are linked to cells sending wrong or confused signals

A third of all pharmaceutical drug development targets communication of protein cells

from the lab

➤ The most advanced life on our planet would probably still be bacterial slime without this gene. Our research revealed the gene probably originated from bacteria to facilitate synthesis of proteins, and then mutated to acquire completely new functions.

STEVEN PELECH, a professor at the University of British Columbia, Canada.



Centre parks Rs 70k cr for 7th Pay Commission

Secys' panel to decide on more funds

As much as Rs 70,000 crore has been provisioned in the Union Budget 2016-17 for implementation of Seventh Pay Commission for government employees, a top Finance Ministry official said.

While the Budget did not provide an explicit overall provision number, the government had said the 7th Pay Commission hike has been built in as interim allocation for different ministries and Budget numbers were credible.

Implementation of the pay commission report in toto is to cost the government Rs 1.02 lakh crore.

"We have provisioned for around 60-70% of the total burden that was talked about," the official said, adding about Rs 70,000 crore has been provided in the Budget.

"We will wait to see the report of the Committee of Secretaries on the 7th Pay Commission and decide if we need further allocation," he said.

The Budget document states that "the implementation of the Seventh Pay Commission due from January 1, 2016, is to be implemented during 2016-17 fiscal, as also the revised One Rank One Pension (OROP) scheme for Defence services."

The Finance Ministry has provisioned for this in the Demands for Grants for individual departments and ministries. It is built into and subsumed into those allocations.

"No one actually knows what will be the actual burden on the exchequer for the implementation of Pay Commission recommendation. We have calculated internally and allocated to various ministries and departments accordingly," the official said.

The government in January set up a high-powered panel headed by Cabinet Secretary P K Sinha to process the recommendations of the 7th Pay Commission which will have bearing on the remuneration of 47 lakh central government employees and 52 lakh pensioners.

The Empowered Committee of Secretaries will function as a Screening Committee to process the recommendations with regard to all relevant factors of the Commission in an expeditious detailed and holistic fashion.

The official further said the finance ministry has fully provided for OROP scheme for defence personnel.

Faced with the burden of Pay Commission recommendations, there were concerns on whether the government would be able to stick to the fiscal deficit target of 3.9 per cent for 2016-17.