

## **India's March Towards Aatmanirbharta**

**- Amb. (Dr.) Mohan Kumar**

It was in May 2020 that Indian Prime Minister Modi made a clarion call for a Bharat that was “*Aatmanirbhar*”. It is important to clarify what this meant and what it did not. While a rough translation of the word is no doubt “self-reliant”, it is nevertheless not the kind of self-reliance that India arguably believed and practiced in the early years of its independence up until the seventies and eighties. It is easy to state what it is not. It is certainly not autarchy; it is certainly not inward-looking; and it is most certainly not stopping imports and making every product at home. It may be more prudent to think of “*Aatmanirbharta*” as Self-Reliance 2.0.

In this framework of Self-Reliance 2.0, the PM clarified that rather than be self-centred, India will open up even more to the world outside, guided by its motto: *Vasudhaiva Kutumbakam*, or our Earth is just one family. PM Modi went on to say that Aatmanirbharta will stand on five pillars: economy, infrastructure, technology, demography and demand. PM explained the *raison d'être* of Aatmanirbharta by saying that this should prepare India for participation in global supply chains and that this is a battle India cannot afford to lose.

There is little doubt that the global pandemic i.e. COVID-19, played a significant role in India's push for Self-Reliance 2.0. Take the simple example of PPE (Personal Protective Equipment) and N-95 masks. At the beginning of the pandemic, India was not making any N-95 masks. Today, India manufactures at least 200,000 N-95 masks a day, if not more. Even more impressive is India's own record of vaccinating its mammoth population. In 2020 when COVID emerged, almost no one believed India could ever fully vaccinate its population and that such an exercise would take years and years. Yet, in July 2022, about 18 months the first vaccination began, India completed 2 billion doses of vaccines for its citizens. The story of how this was achieved is worthy of a case study which will cover vital issues such as

public-private partnership, centre-state cooperation and not to mention building awareness among citizens and getting their participation willingly in this exercise. Indeed, the WHO and others have praised India and the best practices here will be emulated the world over. Proving that Self-Reliance 2.0 is not just for Indians, India also exported a large number of vaccines and PPE countries all over the world. The latest statistics from the MEA website talks of 240 million (approx) vaccines which have been delivered to 101 countries, of which there are developed, developing and least-developed countries. The story of India being the pharmacy of the world is too well known to bear any repetition here. All of this is real “aatmanirbharta” at work.

The COWIN platform that India used for distributing vaccines to its mammoth population was remarkable. COWIN is essentially a cloud-based IT solution for planning, implementing, monitoring and evaluating COVID vaccination in India. By July 2021, India decided to make this open platform available to all countries for their use. In the COWIN global conclave organized in July 2021, as many as 142 countries in the world expressed interest in adopting this platform. Again, this is Aatmanirbharta at work.

The war in Ukraine has had a profound impact not just in Europe, but more importantly for developing and least-developed countries. Specifically, the war has impacted food, energy and commodity prices adversely. Wheat shortage in particular, is expected to affect Africa and the Middle-East quite significantly. At a time like this, it is comforting to know that India’s position when it comes to food security for its huge population is satisfactory. This is yet another manifestation of Self-Reliance 2.0. Indeed, not only was India able to give away food-grains and lentils to 800 million of its citizens as part of the *Pradhan Mantri Garib Kalyan Yojana*, India was also able to carry out modest exports of food-grains to low income countries that needed it. Again, Aatmanirbharta at work.

Yet another amazing success story of Aatmanirbharta is the case of Unified Payments Interface (UPI) which is a government-backed centralized digital payment gateway, widely popular in India. To understand the significance of UPI, consider this: India accounted for the largest number of worldwide digital transactions in 2021 at a whopping 48 billion, a number that is

nearly three times bigger than China's (18 billion) and is at least six times bigger than the transactions of US, Canada, UK, France and Germany combined. Voices in the US are saying that we must learn from India which is leapfrogging into the future. Again, Aatmanirbharta at work.

The above is not to suggest that everything is rosy. India faces monumental challenges with regard to eradication of poverty, job creation and investment in health/education/skills of its vast population. But the lessons are clear: India is sui generis and it is only an "Indian" model that will work for India and Indians. Hence, the capital importance of Aatmanirbharta. After all, as we have seen above, 'Aatmanirbhar Bharat' is not just good for India but also for the world at large.

\*\*\*

[Ambassador (Dr.) Mohan Kumar is a former Indian Ambassador and a full time academic now.]

## **India's Approach to Development Partnership**

**- Ambassador Gurjit Singh**

In a globalising world there was an increasing shift towards development partnership. Today, when globalisation is threatened due to the pandemic and a new war in Europe, there is a greater requirement for development partnership programmes. India's approach to development partnership was rooted in the experience of India's freedom movement. This had solidarity with other developing countries who were also shaking off the yoke of colonialism and thereafter, of under- development. Despite initial resource constraints, India immediately after its independence in 1947, began to share its developmental experience and technical expertise with other countries. This began with scholarships and capacity building programmes and then spread to institution building.

India's developmental partnership approach focuses on human resource development; it shows respect for partnerships, provides for diversity, looks at the future and puts sustainable development at the centre. India's development cooperation is typically unconditional. In a survey of African interlocutors 60% said that they saw the HRD, capacity building, training and scholarships as a valuable part of the Indian partnership, next only to Indian FDI. Cooperating with development partners on an equal basis, and guided by their development priorities is India's fundamental approach. In the landmark address of Prime Minister Modi to the Parliament of Uganda in July 2018 he said 'Our development partnership will be guided by your priorities. It will be on terms that will be comfortable for you, that will liberate your potential and not constrain your future. We will build as much local capacity and create as many local opportunities as possible'.

India's model of development cooperation is organised to be responsive to requests from partner countries and provide technically and financially feasible solutions. The main instruments of India's development partnership include lines of

credit, grant assistance, small development projects, technical consultancy, disaster relief and humanitarian assistance, as well as capacity building programmes under the Indian Technical and Economic Cooperation (ITEC) programme. In a recent survey in Africa, the ITEC had the best recall among various development efforts.

The establishment of the ITEC program in 1964 came about as India understood that newly independent and emerging countries faced challenges for their development. There was an opportunity to fill such gaps. The ITEC hence brought India's own development experience and growing achievement to share with other developing countries.

The ITEC program has 6 core qualities. These are:

- (1) Training in India for regular courses in several areas within the ITEC courses
- (2) Provide consultancy services and conduct feasibility studies for proposed projects in partner countries
- (3) Set up grant-based projects in partner countries in areas mutually agreed upon
- (4) Dispatch experts to partner countries
- (5) Study and experience sharing tours by decision makers from partner countries
- (6) Provision for disaster relief and humanitarian assistance

Indian partnership directly supports national development priorities. India also contributes to multilateral funds for similar achievements like the IBSA fund or the India-UN Development Partnership Fund. Where loans are involved or institutions are built, there is now a greater emphasis on business plans to make these projects financially sustainable. The main point is that they should support development priorities, which internationally today include the Sustainable Development Goals. Development cooperation adds value to the development processes of its partners. The projects emanating from the partnership can play an important role in providing incentives for profitable activities, which can have developmental impact. The Indian impact investment movement for implementing the SDGs through investment is an example of this.

The development partnership that India follows creates new opportunities for other developing countries using its own experience, and capability of its public and private sectors. Thus, it tries to overcome the structural impediments that limit the absorption among other countries and creates easily scalable and transferable models. This criterion is increasingly important. The Indian model of cooperative development partnership seeks to provide ownership of the assets and the capacities which are built through partnership with India of the host country. It aims to complement resources and capacities while respecting the sovereignty of partners and their own development plans. This has led to the Indian partnership model earning respect among developing countries and from international partners. India's efforts are also cost effective and spend less on high fees for consultants and focus more on delivery. The creation of a new Trilateral Development Fund in India will incrementally channel diverse funds into supporting the Indian model of cooperation in developing countries.

In Nepal, India has constructed highways, electrified villages, provided drinking water projects and increased the power potential of the country. Amid Sri Lanka's recent crisis, India has provided support of about \$ 3.8 billion for immediate assistance to alleviate the problems faced by the people of Sri Lanka for fuel, food and medicines.

In Africa, the Pan African E-network project was the largest project which covered 47 countries to provide them with telemedicine and tele-education facilities between 2009 and 2019. It has now moved into the next digital phase. There are other success stories like the Centre for IT Excellence in Ghana and Entrepreneurship Development Training Centre in Senegal. The India-Africa Forum Summits provided a new paradigm for India's development partnership, raising the funding by several billion dollars.

In ASEAN countries, India has contributed several projects to the ASEAN Initiative for ASEAN Integration and has also supported projects in Cambodia, Myanmar, Laos and Vietnam that have helped in narrowing the Development Gap. India has undertaken projects through the India-Central Asia Forum and the Forum for India-Pacific Islands Cooperation.

As India's economy grew, India opened its facilities further and encouraged its private sector to go to Africa and other countries with greater support of concessional loans and support to private sector investment. It is these approaches which are now being honed under the India Development Initiative into a new set which will keep pace with the current situation and provide succour to India's development partners in a sustainable manner.

\*\*\*

[Ambassador Gurjit Singh is a retired Indian diplomat and has been India's Ambassador to Germany, Indonesia, ASEAN, Ethiopia and the African Union]

## **75 Years of Progressive India**

**- Ambassador Anil Trigunayat**

75 years of free India are replete with stupendous achievements. These become more remarkable because the country had to make a 'Tryst with Destiny' bringing out an exploited 1/6<sup>th</sup> of the humanity from the vagaries of the colonial yoke. Hence, the major challenges included socio-economic development and nation building through education and industrial development, eradication of poverty, food self-sufficiency in a drought hit era with a divided nation by the colonial masters who were forced to lift their colonial shackles by the Gandhian non-violent movements. This was even more difficult as the world was divided into Cold War adversaries and bloc politics which India could not have subscribed to. Hence, India not only stood and helped in the emancipation of large number of colonized countries but also created a third way with a more equitable force in the form of NAM (Non-Aligned Movement) to serve national interest and cause of peace and development especially for the developing and underdeveloped world. It became a champion for the rights of oppressed people at the international fora while discharging its obligations as a responsible international actor and a voice of reason.

India, before the advent of the colonial powers, contributed to over a quarter of the global GDP that went down to less than 4% when they left with her industry decimated and administrative system which was geared to serve interests of the colonial masters. In the last over seven decades, India has engineered Green, Yellow and White Revolutions with continuous upgradation in technology in the agricultural and food processing areas not only to meet demand of a burgeoning population but has also emerged as a net exporter and helper to the world. India has also emerged as credible nuclear and space power in the world- the tools it intends to employ for the global good.

Prime Minister Narendra Modi while speaking at the inaugural of curtain raiser activities of the *Azadi Ka Amrit Mahotsav* reiterated and reaffirmed that "We are proud of our Constitution. We are proud of our democratic traditions. The mother of democracy,

India is still moving forward by strengthening democracy. India, rich in knowledge and science, is leaving its mark from Mars to the Moon. Today, India's startup ecosystem has become a center of attraction in the world. Today, India is moving out of the darkness of scarcity to meet the aspirations of more than 130 crore (1.3 bn) people.” India has the largest young aspirational population and the fastest growing market economy which is ready to cater to the needs of teeming billion plus people who take pride in the Indian story.

As a result of umpteen initiatives by the present government, hundreds of archaic laws have been dispensed with. India’s global ranking for DBI (Doing Business with India) has moved up significantly even as more needs to be done. India has become a favorite investment destination garnering the highest annual FDI inflow of \$83.57 billion in FY21-22 despite the Pandemic. Computer Software and Hardware became the top recipient sector of FDI Equity inflow with a share of around 25% which indicates that India figures prominently for the investors as the AI driven Industrial Revolution 4.0 moves to a higher orbit. India also boasts of a fast growth in billionaire Unicorns globally. Moreover, the FDI equity inflows in Manufacturing rose by 76% in FY 2021-22 well supported by the Indian policy framework and ‘Make in India’ and PLI ( Performance Linked Initiative) schemes. This is a remarkable achievement and a testament to Indian economic and political resilience.

Likewise, for the first time Indian exports of goods and services reached over \$600 billion in 2021-22 despite the global problems and supply constraints due to the pandemic and the ongoing Eurasian war. India has always been a trading nation and is working hard to reclaim that status yet again. Along with this, India is also focusing on self-reliance with a global footprint - ‘*Atmanirbhar Bharat*’, especially in manufacturing sector and to be an integral part of alternate value and supply chains which are resilient and reliable for the national interest and the global good. In this context, India’s participation in the I2U2, Quad, Indo-Pacific Economic Framework (IPEF) and other regional and sub regional connectivity oriented frameworks acquires a renewed salience and focus. Likewise, vigorous move to

expeditiously implement INSTC (North South Transport corridor), strategic connectivity projects like Chabahar in Iran to Afghanistan to Central Asia and Europe or North-Eastern India to ASEAN corridors aim at providing crucial trade and economic linkages for India's centrality in global supply chains.

As India wishes to lead through the AI driven Industrial revolution 4.0, its Digital India, Innovate, Start Up and Stand Up India campaigns have become the hallmark of a unique digital footprint. Some initiatives like the access to internet, banking at the doorstep and direct payment into accounts to nearly a billion Indians are the game changer and are providing the leadership position to India in the comity of nations. PM Modi recently, while speaking at the inaugural of first bullion exchange, claimed that India already accounts for 40% of global digital payments.

India's foreign policy has become more robust and confident with impeccable credentials as the country pursues a value based foreign policy clearly driven by strategic autonomy to subserve her own national interests which are aligned with the global welfare and has emerged as a voice of reason at the global stage. India at the UNSC no longer pleads for a place on the horse shoe table but claims it on the basis of her credentials. Meanwhile, India continues to play the global leadership role as a voice of the developing and underdeveloped countries be it for the waiver of Intellectual Property Rights for Vaccines or at the WTO negotiations on fishing and agriculture and on the reforms for the multilateral institutions.

India is also on the forefront of fight against Climate Change. The International Solar Alliance (ISA), Coalition of Disaster Resilient Infrastructure (CDRI) and 'One Planet One Health' are the initiatives which India has launched with and for the global community as it has emerged as a first responder in the crisis situations from natural disasters to the pandemic. With a clear focus on multilateralism and primacy of the UN Charter, India navigates her foreign and security policy with dignity and confidence as she engages with diverse partners across various groupings like the Quad, BRICS, SCO, G20 and Indo-Pacific Economic Framework (IPEF) where India becomes a pivot. Her Neighborhood First, Act East and Link West and Africa for

Africans policies provide her the effective fulcrum for mutually beneficial partnerships.

India's capacity building assistance under the ITEC (Indian Technical and Economic Cooperation) to over 160 countries and supply of essential medicines, medical supplies and deputing professionals and paramedics during the pandemic have given it unparalleled heft as a responsible global centric power always rising to the occasion. India has emerged as a first responder during the crises with the 'Share and Care' attitude, immensely adding to its Soft Power which has translated into an unprecedented support for India at the international fora including at the declaration of June 21 as the International Yoga Day.

As a new global order emerges out of the current churn and transition, India is all set to take up a benign leadership role during the '*Amrit Kaal*' - next 25 years with a strong polity, stronger economy and efficient foreign policy which is robust, resilient and result oriented and with the global good at the core.

\*\*\*

[Anil Trigunayat is a former Indian Ambassador to Jordan, Libya and Malta]

# **India – A Vibrant Democracy and A Pluralistic Society**

**- Ambassador A. R. Ghanshyam**

## **Introduction**

For much of the two thousand years of the Common Era, India was the largest economy contributing a third of the global output. Archaeological evidence traces the origins of ancient India's Indus Valley Civilization to the 5<sup>th</sup> millennium before the Common Era. During medieval times too India witnessed several glorious empires and great civilizations spread across millions of miles under enlightened emperors.

Towards the last quarter of the last millennium, India came under the influence of East India Company for almost a century during 18th and 19th centuries. Thereafter the Sepoy Mutiny in 1857 compelled the British to place India directly under the British Crown for another ninety years. For almost two centuries, therefore, India was anchored to Great Britain serving the interests of only the British Empire. Of all the colonies the British conquered, controlled and immensely benefited from it was India that was by far the biggest and the wealthiest and was often referred to as the Jewel in the (British) Crown.

Before finally leaving India the British divided the Indian subcontinent into two countries in three parcels - India, Pakistan West and Pakistan East. India's population then was 330 million and the GDP was INR 2.7 trillion - a paltry 3% of the global GDP. A country which accounted for a third of the global output for much of two millennia before had thus been bled bone dry by the colonial masters.

## **Independent India**

Independent India has witnessed seventeen free and fair Parliamentary Elections with fifteen Prime Ministers at the helm - each contributing his/her mite to the growth, stability and development of the Indian Nation, its society and economy. How individual Prime Ministers of India tried to build a modern India from the debris of two centuries' rule by the British Empire is in

itself a great story and has been narrated by many authors, Indian and foreign.

In the seventy five years since independence, India has negotiated a difficult, at times treacherous, journey replete with five wars (1948, 1962, 1965, 1971 and 1999) and facing frequent occurrence of natural calamities i.e. floods, famines, droughts and epidemics. Two of its elected Prime Ministers were brutally assassinated and a third died mysteriously after signing the Ceasefire Agreement in the Soviet city of Tashkent post the India-Pakistan 1965 War. A stretch of 21 months during 1975-77 remains an aberration in India's otherwise uninterrupted democracy when fundamental rights of Indian citizens were suspended during the period of national emergency.

### **Progress achieved**

Much water has flown in the *Ganga* since India attained her independence. During 1950-51 the contributions to Indian GDP by agriculture, industry and services sectors were 56%, 15% and 29% respectively. Agriculture employed the largest work-force of 72% with Manufacturing and Services providing 10% and 18% jobs respectively. Today the service sector accounts for 54% of Indian GDP. The Industry and agriculture follow with 25.92% and 20.19% respectively.

Life expectancy on the eve of independence was 32 years. It has now gone up to 70 years. In 1950, infant mortality rate in India was 145.6/1000 live births and maternal mortality ratio in the 1940s was 2000/100,000 live births which declined to 1000 in the 1950s. There were just 50,000 doctors across the entire country and the number of primary healthcare centres was 725. Today, infant mortality is 27.7 per 1000 births and maternal mortality rate is 103 per 100,000. India now has more than 1.2 million doctors. There are 54,618 Sub-Health Centres (SHC), 21,898 Primary Health Centres (PHC) and 4,155 Urban Primary Health Centres (UPHC), as on December 8, 2021. There are as many as 70,000 public and private hospitals. As of April 5, 2022 there were 117,771 Ayushman Bharat-Health and Wellness Centres (AB-HWCs) are operational in India apart from 748 e-Hospitals established across the country as part of the 'Digital India' initiative of the government.

As for education, when the British left India there were 210,000 primary schools, 13,600 middle schools and 7,416 higher secondary schools in India apart from 498 colleges and 27 Universities. Today there are 1.6 million schools, 42,343 colleges and a thousand Universities. More than 250 million children are going to school today in India and close to 40 million are enrolled in our Universities.

India survived a devastating once in a century pandemic of Covid 19 and its economy contracted by 7.3% in the financial year 2020-21. It may be some consolation that this contraction was lower than in other major economies. As per latest available estimates the growth rate of GDP for 2021-22 is pegged at 8.7% which has to be seen in the context of 7.3% contraction in the preceding year.

India is bound together as a great nation by the strength and stability of its democracy, the rule of law and a breath taking diversity of its populace in terms of religion, language, culture, climate, history, geography and more. At the time of India's first census in 1951 Hindus were 305 million (84.1%), Muslims 35.4 million (9.8%), Christians 8.3 million and Sikhs 6.86 million (1.9%). In 2022 the estimated population is 1090 million Hindus (79.80%), 200 million Muslims (14.23%), 31.2 million Christians (2.3%), 23.7 million Sikhs (1.72%), 9.6 million Buddhists (0.70%), 5.1 million Jains (0.37%) and 9.1 million (0.66%) other religions and 3.3 million (0.24%) religion not stated. There are two million Hindu temples, 300,000 active mosques, 8,114 Jain temples a few of them abroad, more than 125 Buddhist temples, monasteries, stupas and pagodas, some 35 Jewish synagogues etc. At the time of independence many predicted that India will splinter into pieces based on caste, creed, tribe, language, culture etc., but she has remained in one piece and stronger than ever.

### **Future Prospects**

In the last ten years, despite a sliding down of growth rates since 2016 till the economy picked up this year and a significant unemployment burden haunting policy makers in the country, there is a quiet revolution taking place in the arena of technology, digitization and innovation spearheaded by young Indian

companies. The government's *Atmanirbharta* crusade has given an impetus to it.

Latest research of the Indian economy in the last ten years by analyst Ruchir Sharma has a few exciting revelations. In 2011 India had 55 Billionaires with a cumulative wealth of US \$ 256 billion which was then equivalent to 13.5% of India's GDP. Ten years later in 2021 India hosts 140 billionaires with the cumulative wealth US\$ 596 billion equivalent to 19.6% of the GDP. Sharma adds that 110 of these are new Billionaires created during the course of just last decade. At the time of independence India was the sixth largest economy in the world. In 2021 it retains the same position which is no mean achievement with India's population having more than quadrupled.

Notwithstanding the above, there is no room for complacency because (a) India still have a large population that lives below the poverty line, estimated by the World Bank at 140 million which is 10% of the population, (b) the formal and informal sectors may not able to absorb the large number of educated young who are passing out of colleges (2022 estimate is 10.76 million), (c) external and internal factors will keep haunting the policy establishment in its effort to achieve double digit GDP growth rate which is the need of the hour for India. Be that as it may India also has several advantages - (i) a median age of less than 30 years, (ii) a strong and focussed government, (iii) growing market, and, (iv) an innovative Indian youth. If India persists with its pursuit of building and consolidating its infrastructure, keeps the society cohesive and harmonious, stabilizes predictable consistency in policy formulation and implementation, a brighter future can be ensured for its future generations.

\*\*\*

[Ambassador A. R. Ghanashyam is a retired Indian diplomat who has served as Ambassador of India to Angola and High Commissioner of India to Nigeria]

## **Harnessing India's Space Technology Potential**

**- Amb. P. S. Raghavan**

On June 11 this year, India's Prime Minister Narendra Modi inaugurated the headquarters of the Indian National Space Promotion and Authorization Centre (IN-SPACe). It was a significant step in the operationalization of reforms launched by the Government of India to promote private sector participation in India's space sector, providing access to space assets, data and facilities, which were hitherto entirely with the government entity, Indian Space Research Organization (ISRO).

IN-SPACe is an independent single-window agency, which will permit and oversee activities of private enterprises in building and launching satellites, and providing space-based services. It will evolve suitable mechanisms for sharing of ISRO's technologies and expertise at no cost or at reasonable prices, to avoid reinventing the wheel. ISRO's capital-intensive, high technology facilities will be made available for use by private enterprises. In short, the Indian government will, through IN-SPACe, ensure a level playing field for private industry, with enabling policies and a friendly regulatory environment.

India's space industry has recorded remarkable successes over the past decades, in the face of a hostile external environment (sanctions, export controls, technology denials) for much of the period of its development. ISRO has developed end-to-end technologies for space-based services and applications in various sectors. It has indigenously developed sophisticated technologies of strategic importance. It designs, builds and launches satellites for high throughput communications, geo-imaging and high-resolution earth observation, and operates an independent Indian stand-alone navigation satellite system (NavIC). In scientific and developmental applications, the Indian space programme is, in some respects, ahead of that of some of the more advanced space-faring nations.

The global space industry today generates revenues of nearly \$400 billion. This figure is projected to grow to over \$1 trillion

by 2040 and \$2.7 trillion by 2050. This growth will be driven by increasing demand for new automation technologies and miniaturisation, resulting in cost, time and quality benefits. Space technology is already widely accessible, and more sophisticated versions will further widen its reach, as new generation networks and enhanced satellite navigation services upgrade connectivity with faster communication and high-resolution images. In addition to Elon Musk's SpaceX and Jeff Bezos' Blue Origin, a flourishing private space industry has arisen, offering a range of space services.

India's share in the global space market is miniscule, despite rising demand. The reason is that ISRO has had a near-monopoly over the supply of these services, and its primary focus has been developmental and scientific applications for the use of the government and its agencies.

The demand for dedicated communication (Satcom) capacity, as well as Earth Observation (EO) applications is rising rapidly. Large corporates are willing to invest in their own satellite, thereby ensuring captive capacity for their future needs. New applications like inflight and maritime broadband connectivity, and government initiatives like Digital India and Bharatnet offer new opportunities for companies in the Indian Satcom market. With growth in EO technology, mining companies can replace their field equipment with satellite-based analytical and monitoring tools.

As of now, Satcom services' demand in India is estimated at around \$11 billion. This does not reflect true demand, because of the supply-driven framework. ISRO's in-house capacity provides communication mainly to remote geographical areas and islands, which terrestrial cables cannot access economically. Imported satcom services are considerably more costly, thereby depressing demand. When the private sector manufactures and launches satellites, the market will move to a truly demand-driven situation. INSPACE will oversee the rollout of policies to enable privately-owned communication satellites and ground stations, with allotment of suitable orbital slots to them.

The first important step in commercializing launch vehicle production was taken with the award of a contract for

manufacturing five Polar Satellite Launch Vehicles (PSLVs) to a consortium of the public sector undertaking Hindustan Aeronautics Limited and the private sector company Larsen & Toubro, for \$103 million.

Earth observation data for satellite imagery is also an under-provided market, since regulations hitherto mandated that data requirement of customers should be sourced only through ISRO. Again, ISRO's capacity is almost fully utilized for the requirements of the government and its agencies. To meet the demand from other users, it imports and resells data, making it more expensive. The new policy will permit privately owned and operated space-based remote sensing systems for activities within and outside India.

The demand for geospatial data in India is projected to grow to nearly \$12 billion by 2029-30. The government has recently taken measures to nurture and develop the geospatial ecosystem of the country. It has lifted the requirement of licence or prior approval for the collection, generation, dissemination, storage and/or digitisation of geospatial data and maps. This will spur growth in downstream applications by significantly reducing the price of high-resolution data and its applications.

As the repository of space technologies, ISRO has a crucial role to play in sharing them with Indian industry. Indian entrepreneurs could also build technology partnerships with foreign companies willing to invest in bringing satellite technology to India.

ISRO has equipped IN-SPACE with a technical lab with state-of-the-art equipment for design, fabrication, integration and testing of satellites, which will be available to Indian companies. More modern facilities and infrastructure are to be made available to the space industry.

The use of space-based technologies in warfare, intelligence and defence has been highlighted by recent conflicts in West Asia and Ukraine. Space-based systems for defence communications, high-resolution imagery for target detection and other real-time information are important defence needs. The secrecy involved in defence applications means that these products have to be indigenously manufactured, serviced and upgraded. There may be opportunities for reputed Indian companies in this area.

There has already been a rapid growth in space start-ups and companies upgrading manufacturing capability in the space sector. An industry body, the Indian Space Association, has been formed to promote the interests of this nascent industry and for policy advocacy with the government and its agencies. This is an important role at this stage, when the government, ISRO and the private space industry are all seeking to evolve an optimal public-private partnership.

If the reforms progress as projected, the Indian space sector should generate – in domestic sales and exports – at least USD 50 billion of revenues by 2025.

\*\*\*

[The author, Distinguished Fellow of the Vivekananda International Foundation, is a former diplomat.]