# DA – Innovation

#### The US commercial space industry is booming – private space companies are driving innovation.

**Lindzon 21** [(Jared Lindzon, A FREELANCE JOURNALIST AND PUBLIC SPEAKER BORN, RAISED AND BASED IN TORONTO, CANADA. LINDZON'S WRITING FOCUSES ON THE FUTURE OF WORK AND TALENT AS IT RELATES TO TECHNOLOGICAL INNOVATION) "How Jeff Bezos and Elon Musk are ushering in a new era of space startups," Fast Company, 2/23/21, https://www.fastcompany.com/90606811/jeff-bezos-blue-origin-elon-musk-spaces-space] TDI

In early February, Jeff Bezos, the founder of Amazon and one of the planet’s wealthiest entrepreneurs, dropped the bombshell announcement that he would be stepping down as CEO to free up more time for his other passions. Though Bezos listed a few targets for his creativity and energy—The Washington Post and philanthropy through the Bezos Earth Fund and Bezos Day One Fund—one of the highest-potential areas is his renewed commitment and focus on his suborbital spaceflight project, Blue Origin. Before space became a frontier for innovation and development for privately held companies, opportunities were limited to nation states and the private defense contractors who supported them. In recent years, however, billionaires such as Bezos, Elon Musk, and Richard Branson have lowered the barrier to entry. Since the launch of its first rocket, Falcon 1, in September of 2008, Musk’s commercial space transportation company SpaceX has gradually but significantly reduced the cost and complexity of innovation beyond the Earth’s atmosphere. With Bezos’s announcement, many in the space sector are excited by the prospect of those barriers being lowered even further, creating a new wave of innovation in its wake. “What I want to achieve with Blue Origin is to build the heavy-lifting infrastructure that allows for the kind of dynamic, entrepreneurial explosion of thousands of companies in space that I have witnessed over the last 21 years on the internet,” Bezos said during the Vanity Fair New Establishment Summit in 2016. During the event, Bezos explained how the creation of Amazon was only possible thanks to the billions of dollars spent on critical infrastructure—such as the postal service, electronic payment systems, and the internet itself—in the decades prior. “On the internet today, two kids in their dorm room can reinvent an industry, because the heavy-lifting infrastructure is in place for that,” he continued. “Two kids in their dorm room can’t do anything interesting in space. . . . I’m using my Amazon winnings to do a new piece of heavy-lifting infrastructure, which is low-cost access to space.” In the less than 20 years since the launch of SpaceX’s first rocket, space has gone from a domain reserved for nation states and the world’s wealthiest individuals to everyday innovators and entrepreneurs. Today, building a space startup isn’t rocket science. THE NEXT FRONTIER FOR ENTREPRENEURSHIP According to the latest Space Investment Quarterly report published by Space Capital, the fourth quarter of 2020 saw a record $5.7 billion invested into 80 space-related companies, bringing the year’s total capital investments in space innovation to more than $25 billion. Overall, more than $177 billion of equity investments have been made in 1,343 individual companies in the space economy over the past 10 years. “It’s kind of crazy how quickly things have picked up; 10 years ago when SpaceX launched their first customer they removed the barriers to entry, and we’ve seen all this innovation and capital flood in,” says Chad Anderson, the managing partner of Space Capital. “We’re on an exponential curve here. Every week that goes by we’re picking up the pace.”

#### The plan creates a restriction that encourages companies to move their operations to states with lower standards.

Albert 14 [(Caley Albert, J.D. Loyola Marymount University) “Liability in International Law and the Ramifications on Commercial Space Launches and Space Tourism,” Loyola of Los Angeles International and Comparative Law Review, 11/1/14, https://digitalcommons.lmu.edu/cgi/viewcontent.cgi?article=1708&context=ilr] TDI

A parallel can be drawn here between the commercial space industry and the maritime law concept of the Flag of Convenience. The term has evolved over time, but in this day and age, it is commonly used to mean the owner of a vessel does not want to create an obligation with a country with stricter standards for registry; hence, the owner will register strictly for economic reasons with a country that has a more convenient registry.133 By flying a Flag of Convenience, ship owners are able to avoid taxation on earnings of ships registered under these flags, and in some cases, they can also receive relief from stricter crew standards and corresponding operating costs.134 A Flag of Convenience is flown by a vessel that is registered in one state, which the vessel has little if any connection to, when in reality the vessel is owned and operated from another state.135 This way the vessel avoids any unfavorable economic requirements from its true home state.136 In this sense, “flag shopping” is similar to “launch forum shopping,” similar in that Flags of Convenience are utilized for economic reasons, such as to avoid high taxes and compliance with certain restrictive international conventions, commercial space companies will forum shop when choosing which country to launch from. As of today, there has yet to be a catastrophic commercial launch incident, so for now commercial space companies do not have an incentive to forum shop, but if there is, the indemnification policies described above may lead companies to seek out countries that provide more coverage so they pay less in the event something goes wrong. This comparison to Flags of Convenience brings up two separate yet equally important issues. First, launch companies may try to follow the Flags of Convenience model and soon catch on to the wisdom of their maritime predecessors by “registering” in countries with more favorable conditions. Of course, in this case the concern is not with registration so much as launching. If launch companies follow the Flags of Convenience model, they will seek out the most convenient state for launch, most likely the state that provides the most liability coverage and has the least safety precautions. Launching from states with low safety standards increases the potential for catastrophic launch events. This, in turn, will place states that are potentially incapable of paying for damages from launch disasters in a position they would not normally assume if these commercial companies had not been drawn to their shores with the promise of more favorable regulations. Second, launch customers may also seek out companies located in states with lower cost liability regimes (lower insurance policy limits) since those companies will presumably charge less to launch their payloads. In this scenario, instead of the launch companies seeking out states with lower liability caps and softer regulations, the launch customers themselves will seek companies located in states with lowcost liability regimes. Here, the effect will be the same as above. Under the Liability Convention, the launching state will be liable for any damage caused by a vehicle launched from within its borders; hence, if customers start engaging in “launch forum shopping,” states will be incentivized to put in place low-cost liability regimes, which in turn will increase the states’ potential payout in the event of a catastrophic launch incident. Looking at the indemnification program the United States has in place in comparison to other countries, it is possible to see how either launch companies or launch customers could engage in “launch forum shopping” when a catastrophic launch incident ever occur. It is also important to keep in mind that various factors go into where a company or customer decides to launch from. A state’s indemnification program is just one factor in this decision. With this in mind, it is clear that if a launch incident did occur in the United States, the commercial launch company would be liable for much more than it would in another country. For instance, why would a commercial space company launch in the United States, where it would be liable up to $500 million and the additional costs that the government would not cover? The argument can be made that a catastrophic space incident has yet to occur, and even if it did, it is unlikely to cost above the $2.7 billion covered by the United States government. **Other states like Russia or France, which has the two-tier liability system, would simply cover all claims above the initial insurance**, which is much lower than the $500 million mark required by the United States. In that case, the commercial company would never have to pay more than the initial liability insurance. If there ever is a catastrophic commercial space incident in the future, it is easy to see why commercial companies or launch customers might be drawn to “launch forum shop” outside the United States.

#### Maintaining US space dominance requires a homegrown commercial space industry – private companies offshoring gives China the advantage they need.

**Cahan and Sadat 21** [(Bruce Cahan, J.D) (Dr. Mir Sadat, ) "US Space Policies for the New Space Age: Competing on the Final Economic Frontier," based on Proceedings from State of the Space Industrial Base 2020 Sponsored by United States Space Force, Defense Innovation Unit, United States Air Force Research Laboratory, 1/6/21, https://www.politico.com/f/?id=00000177-9349-d713-a777-d7cfce4b0000] TDI

Today, China’s commercial space sector is in its infancy but is set to grow with continued national and provincial support, which have been rapidly increasing over the past three years.64 Since 2004, the United States and China accounted for 74% of the $135.2 billion venture capital (VC) invested in commercial space. 65 The early 2020s are pivotal, as it would be far cheaper for China and Chinese commercial space firms to acquire space technologies from the United States or allied nation companies seeking revenues or facing cashflow constraints, than to build the companies and their teams and technologies from scratch in China. The tight coupling of Chinese military goals and an economy organized to achieve those goals magnifies the economic threats and market disruptions that the United States must immediately address, in order for DoD and national security operations to rely on US commercial space capabilities. 3. ISSUES AND CHALLENGES Peaceful Uses of Space and Space Exploration Space has been primarily a shared, not a warfighting, domain.67 With each passing second of Planck time,68 space enables a modern way of life, provides instantaneous global imagery, assures telecommunications, and captures humanity’s imagination for civil space exploration. As a result, space is a burgeoning marketplace and territory for commercial ventures and investors. Strengthening the US commercial space industrial base is vital to and beyond US national security. Civil space activities are a source of US “soft power” in global commerce, cooperation, and investment. 69 The civil space sector, led by NASA, is fundamental to America’s national security. 70 NASA is on an ambitious critical path to return to the Moon by 2024,71 along with developing the capabilities and infrastructure for a sustained lunar presence. NASA’s lunar plans provide a lunar staging area for missions to Mars and beyond. They offer a strategic and economic presence for the United States on the Moon. Congress, the White House, DoD, and NASA must recognize that economic and strategic dominance in service of national security requires catalyzing and accelerating growth of a vibrant, private US industrial and cultural expansion into the Solar System. Human visitation and eventual settlement beyond the Earth require sustaining visionary leaders, aided by, and aiding, US national security. A recurring theme in US policy is “maintaining and advancing United States dominance and strategic leadership in space” because US global competitors and adversaries are competent and capable of outpacing American space capabilities. 72 The stakes are high: At this historic moment, there is a real race for dominance over cislunar access and resources. Regulations Should Foster US Commercial Space as a National Asset Leveraging the reimagination and disruption of terrestrial industries, the US commercial space industry is pushing the frontiers of the United States and global space economics and capabilities. A pre-COVID19 assessment by the US Chamber of Commerce projected that the US space market will increase from approximately $385 billion in 2020, to at least $1.5 trillion by 2040. 73 This projection represents a seven percent (7%) annual compound average growth rate (CAGR), driven largely by expanded business opportunities in Low Earth Orbit (LEO). Total addressable market (TAM) for US commercial space companies could be far larger were they to have federal and financial support for initiating cislunar space operations and opportunities. Recent advancements in commercial space technologies and business models have driven down costs and unlocked new areas of economic growth and space capabilities that outpace and de-risk acquiring capabilities through traditional US government economic development, research and development (R&D), procurement and regulatory policies and processes. US regulations must ensure that US companies lead in commercial space. In specific, technological advances that lower access costs and expand space mission capabilities, content, continuity, and redundancies must be fully supported by or incorporated into US government programs, budgets, requirements, and acquisition processes. Until commercial space offerings are fully incorporated, and federal acquisition policies and personnel commit to innovation, US government fiscal buying power, intelligence and program support will lag and remain inadequate in comparison to US private sector companies and the nation’s global competitors and adversaries in space. Addressing COVID-19’s Impact on US Commercial Space The COVID-19 pandemic damaged and still challenges the US space industrial base. US domestic investors’ funding of space R&D remains inconsistent across the lifecycle of New Space companies and the spectrum of technologies necessary to grow the space economy. To date, public R&D, government procurements and visionary space entrepreneurs have played a major role in establishing and funding the New Space industrial base. In the last five years, $11 billion of private capital has been invested.74 Traditional private investors may become reluctant to fund space technologies due to perceptions of higher risk over longer time horizons before receiving profitable returns on their capital. Institutional and long-horizon investors who manage patient capital have an appetite for illiquid, but higher yielding, terrestrial alternative asset investments such as commodities, private equity limited partnerships and real estate.75 The COVID-19 pandemic has created economic uncertainties making the New Space’s funding model unreliable. COVID-19 significantly impacted venture capital (VC)-backed companies: the pace of VC space investments fell 85% between April - June, as compared to January – March, in 2020. 76 Pre-COVID-19, the New Space industrial base confronted multiple challenges in raising later stages of venture capital such as (1) the lag between having an early-stage startup with an idea and commercializing a viable revenue-generating product, (2) the lack of market liquidity for founder and private equity space investments to attract and retain talented teams, and (3) the lack of a market to re-sell contracts for space goods and services when customers buy more capacity than needed. Even prior to the COVID-19 pandemic, federal financing of US R&D was at a historically minor level, as compared to businesses and universities.77 US government support for basic research has steadily declined as a percent of GDP. The federal government will experience near- to medium-term budget constraints.78 The vibrant venture community in the United States has taken up a portion of this slack by increasing R&D investment in later-stage and applied research. However, founding teams and VC financing rely on government to fund earlier R&D for basic science and engineering. Therefore, government must resume the sustainable and impactful past levels of support for basic research, an essential role in the space economy’s public-private partnership that ensures US leadership in space. Space as Existential Terrain for National Security In this Digital Era, space integrates and drives all elements of US national security. The Cold War may be over, but since the early 2010s, a renewed era of great power competition has emerged across terrestrial land, air, sea, and cyber domains. This competition extends into space, where a great game ensues.79 Space is no longer an uncontested or sanctuary domain. Competent and capable global competitors and peer adversaries are challenging US military, commercial, and civil space interests. The United States, along with its allies and partners, has had to accept and anticipate that space may be a warfighting domain, as suggested primarily by Russian and Chinese counter-space capabilities, military operations, and declarative statements. On December 20, 2019, the bipartisan National Defense Authorization Act (NDAA) for Fiscal Year 202080 authorized the creation of the US Space Force, under the Department of the Air Force, to secure US national interests in an increasingly contested domain.81 Back in October 1775, the Continental Congress established the US Navy to ensure that commercial and government fleets could freely navigate the Atlantic coastline - today, that includes the South China Sea. Likewise, the USSF’s mission is to ensure unfettered access to and the freedom to operate in space. The 2017 National Security Strategy considers space to be a “priority domain.”82 Freedom of navigation is a sovereign right that nations have fought to achieve and defend. 83 The USSF’s main role is to organize, train and equip, as well as to protecting US space interests and supporting terrestrial and joint warfighters (e.g., US Space Command). Thus, USSF must secure US national interests in space, whether military, commercial, scientific, civil, or enhancing US competitiveness for cislunar leadership.

#### US space dominance prevents global war

**Zubrin 15** [(Robert Zubrin, president of Pioneer Energy, a senior fellow with the Center for Security Policy) “US Space Supremacy is Now Critical,” Space News, 1/22/15, <https://spacenews.com/op-ed-u-s-space-supremacy-now-critical/>] TDI

The United States needs a new national security policy. For the first time in more than 60 years, we face the real possibility of a large-scale conventional war, and we are woefully unprepared. Eastern and Central Europe is now so weakly defended as to virtually invite invasion. The United States is not about to go to nuclear war to defend any foreign country. So deterrence is dead, and, with the German army cut from 12 divisions to three, the British gone from the continent, and American forces down to a 30,000-troop tankless remnant, the only serious and committed ground force that stands between Russia and the Rhine is the Polish army. It’s not enough. Meanwhile, in Asia, the powerful growth of the Chinese economy promises that nation eventual overwhelming numerical force superiority in the region. How can we restore the balance, creating a sufficiently powerful conventional force to deter aggression? It won’t be by matching potential adversaries tank for tank, division for division, replacement for replacement. Rather, the United States must seek to totally outgun them by obtaining a radical technological advantage. This can be done by achieving space supremacy.To grasp the importance of space power, some historical perspective is required. Wars are fought for control of territory. Yet for thousands of years, victory on land has frequently been determined by dominance at sea. In the 20th century, victory on both land and sea almost invariably went to the power that controlled the air. In the 21st century, victory on land, sea or in the air will go to the power that controls space. The critical military importance of space has been obscured by the fact that in the period since the United States has had space assets, all of our wars have been fought against minor powers that we could have defeated without them. Desert Storm has been called the first space war, because the allied forces made extensive use of GPS navigation satellites. However, if they had no such technology at their disposal, the end result would have been just the same. This has given some the impression that space forces are just a frill to real military power — a useful and convenient frill perhaps, but a frill nevertheless. But consider how history might have changed had the Axis of World War II possessed reconnaissance satellites — merely one of many of today’s space-based assets — without the Allies having a matching capability. In that case, the Battle of the Atlantic would have gone to the U-boats, as they would have had infallible intelligence on the location of every convoy. Cut off from oil and other supplies, Britain would have fallen. On the Eastern front, every Soviet tank concentration would have been spotted in advance and wiped out by German air power, as would any surviving British ships or tanks in the Mediterranean and North Africa. In the Pacific, the battle of Midway would have gone very much the other way, as the Japanese would not have wasted their first deadly airstrike on the unsinkable island, but sunk the American carriers instead. With these gone, the remaining cruisers and destroyers in Adm. Frank Jack Fletcher’s fleet would have lacked air cover, and every one of them would have been hunted down and sunk by unopposed and omniscient Japanese air power. With the same certain fate awaiting any American ships that dared venture forth from the West Coast, Hawaii, Australia and New Zealand would then have fallen, and eventually China and India as well. With a monopoly of just one element of space power, the Axis would have won the war. But modern space power involves far more than just reconnaissance satellites. The use of space-based GPS can endow munitions with 100 times greater accuracy, while space-based communications provide an unmatched capability of command and control of forces. Knock out the enemy’s reconnaissance satellites and he is effectively blind. Knock out his comsats and he is deaf. Knock out his navsats and he loses his aim. In any serious future conventional conflict, even between opponents as mismatched as Japan was against the United States — or Poland (with 1,000 tanks) is currently against Russia (with 12,000) — it is space power that will prove decisive. Not only Europe, but the defense of the entire free world hangs upon this matter. For the past 70 years, U.S. Navy carrier task forces have controlled the world’s oceans, first making and then keeping the Pax Americana, which has done so much to secure and advance the human condition over the postwar period. But should there ever be another major conflict, an adversary possessing the ability to locate and target those carriers from space would be able to wipe them out with the push of a button. For this reason, it is imperative that the United States possess space capabilities that are so robust as to not only assure our own ability to operate in and through space, but also be able to comprehensively deny it to others. Space superiority means having better space assets than an opponent. Space supremacy means being able to assert a complete monopoly of such capabilities. The latter is what we must have. If the United States can gain space supremacy, then the capability of any American ally can be multiplied by orders of magnitude, and with the support of the similarly multiplied striking power of our own land- and sea-based air and missile forces be made so formidable as to render any conventional attack unthinkable. On the other hand, should we fail to do so, we will remain so vulnerable as to increasingly invite aggression by ever-more-emboldened revanchist powers. This battle for space supremacy is one we can win. Neither Russia nor China, nor any other potential adversary, can match us in this area if we put our minds to it. We can and must develop ever-more-advanced satellite systems, anti-satellite systems and truly robust space launch and logistics capabilities. Then the next time an aggressor commits an act of war against the United States or a country we are pledged to defend, instead of impotently threatening to limit his tourist visas, we can respond by taking out his satellites, effectively informing him in advance the certainty of defeat should he persist. If we desire peace on Earth, we need to prepare for war in space.

# CP – PIC India

#### Counterplan text: states except India should prohibit appropriation of space by private entities.

#### Space is an intrinsic part of India’s soft power expansion and they’re set to rapidly scale now

Sarthak Kathayat, Sarthak Kathayat is a student at Jamia Millia Islamia, India., NIICE NEPAL, 11-1-2020, "Soft Power and India’s Space Diplomacy," https://niice.org.np/archives/6420 arnavvs

In international relations, soft power is the ability of any country to persuade other countries to do what it wants without the use of force. According to Joseph Nye Jr., soft power is – getting others to want the outcomes that you want – co-opts people rather than coerces them. As compared to hard power, soft power takes relatively longer to built as its intangible resources develop over a long time. Soft power tends to change other party’s attitude to the end where she acts voluntarily in a way which is different to her usual behaviour. Several characteristics of the current world order like globalisation driven economic interdependence, rise of transnational actors, resurgence of nationalism in weak states, the spread of military technology and the changed nature of international political problems have significantly reduced the effectiveness of hard power strategies. The most noteworthy example of a foreign policy misadventure based solely on hard power strategies is the 2003 US invasion of Iraq. Soft power also has its own weakness. However, the ineffectiveness of soft power strategies is an exception. In longer-term, soft power strategies appear to be more effective in the contemporary world order than the hard power. One such tool of soft power is the space technology and space diplomacy. Space technology are increasingly viewed as a crucial instrument of soft power as states have now understood the direct relation between the technological feats and global prestige that follows. Expertise in rocket science puts a state on a higher pedestal than the countries who are still struggling in the domain. Moreover, expertise in rocket science ensues significant strategic implications. The output delivered has noteworthy social and economic relevance with a massive growth potential. In a broadening concept of security that encompasses other dimensions such as economic, environmental and political, Indian space programme has been distinctive and lucid in the way it simultaneously addresses the requirements of the Indian citizenry and the state collectively in all the dimensions. Despite being challenged by numerous embargoes and technology denial regimes during Cold War, Indian space programme has emerged as the most cost-effective and successful space programme in the world. India’s space programme has been a tremendous achievement for a developing country which despite being faced with many challenges used space as a crucial mechanism to lift its people out of poverty through education, social and economic programmes. With the course of time, India’s space policy has become an intrinsic part of India’s foreign policy to strengthen India’s position as a dominant power in South Asia. Indian Space Programme India’s space programme has been seen making efforts in projecting soft power which is especially evident through its new commitment to planetary exploration and human spaceflight. The Chandrayaan-1 and Mangalyaan-1 mission cleared the fact that India now looks at space as a standard of global standing. India’s soft power has witnessed a progression with an increasingly successful participation in global space economy through ISRO’s commercial arm, Antrix Corporation. India’s growing influence on the global space economy has been an indication of its changing stature in international arena. India has also been involved in capacity building initiatives. It has successfully established itself as a leader in terms of healthcare provisions through satellite-based telemedicine. India hosts the largest telemedicine network in South Asia which has also expanded to the African continent. A non-profit Indian organisation named Apollo Telemedicine Networking Foundation has been involved in telemedicine services with dedicated centres in Iraq, Yemen, Kazakhstan and Myanmar. India’s Space Diplomacy Further using space for diplomacy in order to project its soft power across the globe, India has assisted countries like Colombia in launching its satellite which boosted India-Colombia relations. Many Latin American countries are often dependent on the US for space and military matters. However, after the launch, many countries like Argentina, Bolivia, Brazil, Chile, Ecuador, Mexico, Nicaragua and Venezuela have reached out to ISRO for launching or developing satellites. Similarly, India’s PSLV also launched Israel’s TecSar satellite in 2008 for remote sensing purposes. The launch boosted the political and strategic relations with Israel. Once a recipient of space technology from developed countries, India has demonstrated the robustness of its own space programmes by setting up joint projects and even providing assistance at the time of disaster to a number of countries. ISRO’s Oceansat-2 satellite played a pertinent role in monitoring Hurricane Sandy and helping the authorities to implement timely disaster mitigation and rescue strategies. Adding more feathers to its hat, ISRO has also launched dozens of satellites for US, Europe and Britain based companies. The recent launches of British reconnaissance satellites, NovaSAR and S1-4 are a sign of what could come next. Britain is one of the EU’s biggest spender in space sector. After Brexit, the dispute over Britain’s continued access to the European Union’s Galileo satellite navigation project will inevitably lead Britain look for alternatives and India’s space ambitions could offer a tempting proposition within the ambit of wider bilateral cooperation. As a part of India’s efforts in space diplomacy, ISRO undertook another capacity building initiative ‘Unispace Nanosatellite Assembly and Training (UNNATI)’. Under UNNATI, ISRO planned to train 45 countries in making Nano-satellites. Closer to home, India proposed a SAARC satellite in 2014 for the overall development of the region. The proposal was welcomed by SAARC nations but unfortunately the proposal couldn’t materialise as envisioned initially due to Pakistan’s backing out from the project. However, three years later, in 2017, ISRO launched the South Asia satellite or GSAT-9 to help India’s neighbouring countries in space communication. The idea of South Asia satellite ensured no political impediment as with the case of SAARC satellite. The positive spill over effect of the satellite’s launch on India’s “neighbourhood first” diplomacy was well demonstrated by the warm responses given by the leaders of South Asian countries. India’s space diplomacy with neighbours also extends on a bilateral basis. For instance, in Afghanistan, India included remote sensing satellite transmitters for acquiring space-based data in a USD 1.2 billion aid package. It is evident that soft power strategies are more relevant than the hard power strategies, especially in the contemporary world order. The rise of China as an emerging superpower is backed with its economic and military might leave less avenues for other developing nations such as India to contest China. However, soft power strategies open up another dimension for the interaction of the nations. India has utilised space as a tool of its soft power effectively in order to expand its clout. That space being an intrinsic part of India’s foreign policy has brought numerous achievements to the country, and is expected to remain an essential element for future course of India’s foreign policy.

#### Indian space power maturing now but it’s uncertain.

NARAYAN PRASAD, 8-8-20**19**, " India is a maturing space power, but can rival the US with an independent regulator," Brookings, https://theprint.in/opinion/india-is-a-maturing-space-power-but-can-rival-the-us-with-an-independent-regulator/273886/ // belle

High technology-driven industries in India have seen exponential growth in only two kinds of policy environments: 1. Where the government had a marginal presence, giving a free hand to competitive market-driven economics, such as the Information Technology (IT) services sector. 2. Where the government was an incumbent, but set up a regulator to let the sector attract more private investment and allow market forces to drive growth, such as the telecom industry. The success of both these sectors has led to immense socio-economic benefits, which have been passed on to citizens and contributed to India’s overall economic growth story. The space industry in India today is perhaps where IT was in the 1990s, with several entrepreneurs trying to enter the sector with their own products and services. The question is, how can the government ensure that they survive and thrive? Video Player is loading. PauseUnmute Fullscreen VDO.AI India is a maturing space power Today, the Indian space sector is witnessing exciting start-ups like Astrome, Exseed Space and Pixxel. The difference between them and the traditional industries that serve the Indian Space Research Organisation (ISRO) is that they are trying to build independent products and services, instead of being a cog in the ISRO supply chain. This transition is a sign of a maturing space power. It happened in the US several decades ago, when the government had to find a framework to regulate industry activity, so that entrepreneurs can easily do business in space. The goal in India should be to simply provide regulatory certainty for the start-ups. For example, if a start-up wants to launch its own satellite, it will need a set of frequencies to operate its satellite and communicate with it. Right now, ISRO interfaces with the Department of Telecommunications (DoT) for its satellite operations. However, there is no clarity on what basis such frequencies will be allocated for independently-functioning start-ups. Depending on the type of activity, there are a number of other areas in the space industry which need regulatory certainty for growth. These include licencing to distribute images acquired from satellites, supervising and coordinating potential tests by start-ups wanting to operate their own rockets, etc. Again, to give a sense of how this works in a mature space power like the US, companies do not go to NASA to get approvals for their activities. The US government has deputed independent agencies for the job — such as the Federal Communications Commission to coordinate the use of space frequencies, the Federal Aviation Administration to coordinate space launches and rocketry-related tests, the National Oceanic and Atmospheric Administration to licence those who want to provide imagery-related services, and the United States Department of Commerce to regulates any export-related issues. A single coordinating body could help leapfrog US In 2017, India’s Department of Space issued a draft space bill, which states that companies planning to independently pursue space activities need to apply for a government licence. The draft bill says the government will “put in place a mechanism”, but does not make it clear what timelines, processes or institutions will be involved. Given that the varied nature of activities and the several institutions within the government that need to be involved in providing regulatory clarity to the nascent space industry in India, the space bill should consider setting up of an independent coordinating body which can act as a single point of contact for all types of activities. By establishing a single coordinating body, India has a chance to leapfrog established space powers such as the US, where space entrepreneurs are struggling to deal with multiple agencies and institutions. This will also allow the government itself to effectively coordinate among its own ministries and departments as well. Setting up a body which can make the regulatory framework for this industry will also provide impetus for Parliament to pass the space bill. This would then allow the newly-created body to do all the necessary groundwork in setting the rules of the game for different activities, instead of the space bill having half-baked overarching clauses, which could take us back to the days of ‘Licence Raj’.

#### Private sector key to Indian space efforts

EdexLive, 06-25-2020, "Opening space sector will enable India to play important role in global space economy: ISRO chief," New Indian Express, https://www.edexlive.com/news/2020/jun/25/opening-space-sector-will-enable-india-to-play-important-role-in-global-space-economy-isro-chief-12874.html arnavvs

SRO chief K Sivan on Thursday stated that opening the space sector for private enterprises will help scale up benefits from space technology and enable Indian industry to be an important player in the global space economy. "If the space sector is opened (for private enterprises), the potential of the entire country can be utilised to scale up benefits from space technology. It will not only result in the accelerated growth of the sector but also enable Indian industry to be an important player in the global space economy," the Indian Space Research Organisation chief said. Sivan said that far-reaching reforms in space technology in India will put the country in the league of the select countries. "As part of longer socio-economic reform, space reforms will improve access to space-based services for India's development. Far-reaching reforms will put India in the league of few countries with efficient promotional and authorisation mechanism for private-sector space activities," he said. Talking about reforms that the government is planning to implement in the country's space sector, he said, "Space sector, where India is among a handful of countries with advanced space technology, can play a significant role in boosting the industrial base of India." "The government's decision is to implement reform measures to leverage ISRO's achievement by opening the space sector for private enterprises," he added. He further said that "Department of Space will promote sector space activities to enable it to provide end to end space services, including building and launching of rockets and satellites as well as providing space-based services on a commercial basis." "With this, there is an opportunity for large scale employment in the technology sector and India becoming a global technology powerhouse," ISRO chief added. Sivan also talked about the government's decision to establish an autonomous nodal agency for taking independent decisions for regulating the activities of private companies. "Government has approved the establishment of an autonomous nodal agency - Indian National Space, Promotion and Authorisation Centre - for taking independent decisions with respect to permitting and regulating the activities of private companies in the space sector," said ISRO chief. "It will act as a national nodal agency for handholding and promoting the private sector in space endeavours and for this ISRO will share its technical expertise as well as facilities," he added.

#### Indian soft power and international leadership key to global cooperation and tolerance through cultural diplomacy

**Gupta 20** [(Arunima, Arunima Gupta is Principal at Network of Indian Cultural Enterprises (NICE). She holds a Master’s in International Relations from Leiden University), “Celebrating Indian Soft Power”, USC Center on Public Diplomacy, <https://uscpublicdiplomacy.org/blog/celebrating-indian-soft-power>] KZ

India is a culture-driven soft power. One example is availability and appreciation of Indian cinema as a source of recreation in the conflict-ridden Afghanistan. Another major cultural export is Indian gastronomy, be it turmeric latte sold in cafés, jackfruits used in gourmet preparations or the Australian PM Scott Morison’s display of Samosa diplomacy. Arts, fashion and handicrafts, literary works, and performing arts and tourism are other key aspects of Indian soft power. To realize and maximize the potential of such traditions and practices, it is important to develop a robust cultural creative economy, giving more and more opportunities for creative entrepreneurs to take Indian culture across the globe. This can also lead to cross-cultural cooperation and mutual learnings between cultural experts, entrepreneurs and enthusiasts from across the world.

Dinesh Patnaik, the Director-General of ICCR speaking at Namaste 2020 [observed that](https://www.softpowermag.com/inaugural-session-namaste-2020/) “the soft power of a country is when its cultural assets become a subject of aspiration and admiration by the global community. India is blessed with immense cultural assets, be it Yoga, Ayurveda, literature, arts, heritage, culinary practices, sports and much more, along with being the largest democracy and, having strong institutions and leaders. When the propagation of soft power is done with the idea of fostering mutual respect, shared understanding and joint collaborations for cultural advancements between countries, it becomes the essence of cultural diplomacy.”

Beyond cultural and civilizational heritage, India has been recognized for its role in addressing global challenges and being at the forefront of various development-related initiatives. Though India’s international engagement is guided by its security and strategic interests, it is also underpinned by the values of inclusivity, plurality and welfare for all. The establishing of International Solar Alliance, for example, demonstrated India’s commitment towards mitigating environmental risks through multilateral cooperation. Similarly, Indian offers humanitarian aid to smaller mainland and island economies in times of calamity, while its contributions to the UN Peacekeeping forces are amongst the highest in the world. The country’s cooperation at bilateral and multilateral forums for fighting COVID-19 through supplying hydro-chloroquine to the world as well as directing R&D efforts towards vaccine development highlight India’s contribution in the global pharmaceutical and wellness sector.

Owing to these and many other contributions towards the greater good for all, India is ranked 44th out of 160 countries in the [Good Country Index](https://www.goodcountry.org/) (GCI). According to Anholt, the creator of GCI, the underlying idea is that in the ongoing contest for soft power in the world where countries increasingly seek to lead and steer conversations around power dynamics, there is an increasing desire and necessity to connect with each other’s culture and communities. Speaking on the theme India’s Global Connect at Namaste 2020, Anholt [explained that](https://www.softpowermag.com/event/indias-global-connect/) the ‘goodness’ of a country is determined by its multilateral engagement and cooperation in addressing common global challenges. Higher levels of involvement build positive perceptions about the country that in turn invite greater foreign investment and visitors, thus contributing to the country’s soft power and reputation in the eyes of common citizens.

#### International cooperation key to solving bioterror and health crises

**Roffey et al 02** [(Roger, Swedish Defence Research Agency, Division of NBC-Defense, Umeå. Kurt Lantorp, Department of Infectious Disease Control, Jönköping. Anders Tegnell, Center for Microbiological Preparedness, Swedish Institute for Infectious Disease Control (SMI), Solna. Frederik Elgh, Swedish Defence Research Agency, Division of NBC-Defense, Umeå.) “Biological weapons and bioterrorism preparedness: importance of public-health awareness and international cooperation”, ScienceDirect, 8/2002 [https://www.sciencedirect.com/science/article/pii/S1198743X14626410#](https://www.sciencedirect.com/science/article/pii/S1198743X14626410)!] KZ

Coordination and communication also need to be strengthened, to minimize response times. If a bioterrorist event is suspected, established communication must be among hospital personnel, local and central healthcare departments, specialized laboratories, central and regional authorities for disease surveillance, and police and rescue services. A biological attack will also require of preservation evidence (at the scene of a crime), a unified command system, and the need to protect emergency responders against possible secondary devices intentionally placed to maim or injure them [19,20]. The management of the disease might not follow normal procedures, since diagnostic laboratory confirmation might take too long. Instead, it will be necessary to initiate a response based on the recognition of high-risk syndromes. Epidemiologic principles must be used to assess whether a patient’s presentation is typical of an endemic disease or is an unusual event that should raise concern [21]. There should also be specialist teams on standby that can rapidly analyze any potential threat and give recommendations to responsible authorities. After an incideSic. xnt, there might be a need for decontamination of the affected area, depending on the type of agent and the quantity released; this is also an area for international cooperation, as expertise is not always available in the country under attack. From a European perspective, it can be questioned whether each country can afford or be motivated to set up qualified rapid response teams that could, at short notice, be deployed to the scene of a bioterrorist attack. Perhaps this could be one area for cooperation between countries. What could be a realistic goal for such teams in a European context? In the area of research and development, to enhance our knowledge of agents of concern and to develop rapid methods for identification and detection of agents, international cooperation is vital, given today’s scarce economic resources. Another area for cooperation across borders is the training of personnel in handling situations involving the threat or use of biological warfare agents.

#### Bioterror causes extinction, terrorists love bioweapons lol

Krstić '17 [Marko; January 2017; assistant professor of microelectronics and physics at the University of Belgrade, PhD in Electrical Engineering and Computer Science from the University of Belgrade; "Tendency of using chemical, biological, radiological and nuclear weapons for terrorist purposes," Military Technical Courier, Vol. 65, No. 2, p. 481-498] SC SD

The studies of a few cases of earlier CBRN actions have led experts to identify the key characteristicsof terrorist groupsthat could potentially have an interest to use theseweapons. It is thought that conservatism is inherent in terrorist organizations, but it must not be forgotten that some terrorists are inclined toinnovationsin weapons and tactics**,** as well as to taking risksin actions or in the choice of weapons**.** Many experts agree that most terrorist organizations want to use proven methods to achieve desired effects. Innovations, especially in the field of CBRN weapons, often indicate terrorists are likely to be led by other factors rather than by pure curiosity and desire to experiment. For some individuals, repression and democratic and strong rule of law are positive determinants of the emergence of CBRN actions which points to a new and more complex global security environment with an increasing risk of terrorists trying to perform a CBRN attack. It is a frightening fact that a single terrorist or isolated terrorist group could improvise a biological weaponor use other ways to spread anthrax, smallpoxor other biological agents and thereby cause mass casualties and destroy the health care system of a state. CBRN weapons are secretly shipped to terrorists or hostile governments and represent a significant and growing threat to many countries. Although the threat of CBRN attacks is widely recognized as the central issue of national security, most analysts assume that the primary danger is a threat of the military use of these weapons in conventional wars with traditional military means while the threat of covert attacks, which include terrorism**,** is rashly and unfairly neglected. Covert attacks are difficult to deter or prevent and CBRN weapons suitable for this type of attack are available to a growing number of enemy states and groups. At the same time, restrictions on their use appear to be diminishing, and so-called new terrorists do not always escalate and become apparent only by using unconventional weapons. These weapons are easily spread or transmitted from person to person, have a high mortality rateand a potential impact on public health, causing mass casualties that can crush health systems and cause public panic and social disruption, thus requiring special efforts to suppress them. When assessing the threat of CBRN weapons, we should take into account the change in capacity to carry out terrorist attacks that are on the rise among countries and non-government elements. Analysts believe that the fear of chemical and biological terrorist attacks is excessive, they point out that, in the past, very few attacks involved these weapons, and even those few attempts that have occurred were mostly thwarted by the authorities. A relative ease with which biological weapons can be obtained, along with other current changes and turbulences in the world, sets the stage for another type of warfare in the 21st century. The potential for CBRN terrorism has widely grown since 11 September, when some of these materials were used. The danger of terrorist use of nuclear weapons and other weapons of mass destruction represents a very serious threat for many countries; if a terrorist group could gain access to this weapon, it is highly likely it would use it, or threaten to use it. Although there is very little information on terrorists and their ability to come into possession of nuclear weapons or on their intentions to get them, the risk of CBRN weapons has certainly increased since the terrorists started to become more familiar with these agents and their harmful consequences. Discovering the nature of the threat of biological weapons, as well as the appropriate response to them requires an emphasis on the biological characteristics of these instruments of war and terror. Preparing for a terrorist attack may seem daunting and there are a small number of people with practical experience and a good knowledge of CBRN weapons, because until recently there was no need to own them. In the past, most of the planning regarding emergency response to terrorism concentrated on the concerns of open attacks (bombing). However, the threats of CBRN weapons are taken seriously, especially in the USA, where media, fascinated by new weapons of mass destruction, encourage a growing fear for public safety. Terrorists who have significant human and material resources are much more likely to realize their intentions than lone perpetrators or small terrorist groups. A CBRN terrorism threat is certainly a matter of concern; however, terrorists will face many obstacles in the implementation of an attack of this kind. This includes the acquisition of materials and preparation for spreading them as well as a selection and a survey of a chosen objective and a correct dose required to achieve a desired effect. The growing threat of CBRN terrorism Terrorism can be defined as a deliberate act of violence intended to cause damage, but also to create an appropriate political and ideological situation, so that the use of these non-traditional weapons of terror outside the context is obvious, and the goals will not be military, but civilian ones (Bioterrorism, chemical weapons, and radiation terrorism, nd). Toxic substances, regardless of whether they are of animal, vegetable or mineral origin, were used throughout the history for political assassinations and sabotage; despite the risk of severe penalties, the prospects for success favoured the use of toxic substances. Such use has always been reduced, however, since only a small number of people had access to substances and possessed the ability of learn how to use them (Pascal, 1999). CBRN weapons are rightly viewed with a special sense of horror, their effects can be devastating and indiscriminating, and they take the most stringent toll among the most vulnerable population, non-combatants (e.g. a biological attack cannot be detected sufficiently fast after the disease spreads through the population). Moreover, chemical and biological weapons are a particularly attractive alternative for groups that do not have the ability to produce nuclear weapons, and this risk raises complex but important ethical issues (London, 2003). The common name for CBRN terrorism which causes the death of a large number of people, large scale damage and a strong echo worldwide is post-industrial or hyper-terrorism. This means that non-state elements possess and dispose of assets that were previously held only by states, but unlike them, which often fear reprisals after WMD attacks, terrorists, having no geographical location, are ready to use WMD with much less scrupulousness and fear (Kurmnik, Ribnikar, 2003). Some authors have described the factors that make chemical, biological, radiological and nuclear terrorist attacks in many ways unique and demanding, such as an element of surprise, invisible agents, ordnance, the risk of repetition and new types of risks (Ruggiero, Voss, 2015). In the past 30 years, the use of CBRN weapons has become a major concern for many nations around the world. The public has become insensitive to traditional terrorist attacks that seem to be a less efficient way for terrorist organizations to achieve their goals. What causes shock and fear is actually presenting the properties of weapons which can be used by terrorist organizations to enhance their efforts and the effectiveness of attacks. CBRN terrorism is often a synonym for weapons of mass destruction, although this form of terrorism and related incidents do not require attacks and inflicting harm to large numbers of people they do not even require deadly attacks at all. The number of studies on this type of terrorism is limited due to the lack of available data on this terrorism type. There is a very small number of databases of CBRN incidents, and even the existing ones have relatively little to do with them and they are compared to conventional terrorism (Jesse, 2012). Some experts emphasize the factors that promote such attacks and these factors include the availability of information and expertise, increased frustration of terrorists, demonization of the target population, as well as a millennial, apocalyptic or messianic vision. Experts also differ in opinion when it comes to possible perpetrators of CBRN incidents, and include religious fundamentalists and cults1 as possible perpetrators of such attacks, especially when these groups address to ethereal audience, emphasizing the hatred of unbelievers (Ivanova, Sandler, 2007). Concerns about super terrorism which involves the use of CBRN weapons are mainly focused on what terrorists can do in the context of our social reality, with an emphasis on terrorist motivations, initiatives and limitations. When considering which terrorist groups may be inclined to commit CBRN terrorism, it is important to recognize the spectrum of these acts, as well as to analyze the following categorization: (a) massive casualty events produced by conventional weapons; (b) CBRN scams; (c) conventional attack on a nuclear facility; (d) limited-scale chemical or biological attack or a radiological dispersion; (e) large scale chemical or biological attack or a radiological dispersion; and (f) CBRN strikes (super terrorism) that can lead to thousands of victims. In addition to the motivation and willingness to inflict mass casualties in any way, terrorists must have technical and financial capabilities to come into possession of material and acquire skills for these types of weapons and materials and carry out a successful attack. Chemical and biological weapons can pose a risk to terrorists thus deterring them from using such weapons (Post, 2005, pp.148-151). The possibility that terrorists use chemical or biological substances may increase over the next decade, according to US intelligence agencies. According to CIA2, an interest among non-state actors, including terrorists, for biological and chemical materials is real and growing, and the number of potential perpetrators is increasing. The agency also noted that many of these groups had developed an international network and did not need to rely on state sponsors for financial and technical support. However, it is believed that it is less likely that terrorists would choose chemical and biological weapons over conventional explosives, because these weapons are difficult to control and their results are unpredictable (Condesman, Burke, 2001). The risk of CBRN weapons is growing since terrorists are better acquainted with these agents and their potential for causing harm3. These agents possess desirable characteristics as **weapons** of terror; they are biologically invisible to the naked eye, odorless and potentially lethal in the form of particles; natural organisms are so readily available, and can be "camouflaged" in natural disasters and used to spread fear and various diseases. Chemical agents quickly attack the critical physiological centers of the body, disabling or killing the victim. Biological and chemical weapons require the application of huge amounts of resources and result in different effects, causing fear and panic in the contaminated areas. Often referred to as "weapons of mass destruction", but, in medical terms, they are weapons of potential mass casualties because they can lead to massive death toll in the absence of preventive measures and timely response (Meyer, Spinella, 2014, pp.645-656). "Bioterrorism is the intentional use of microorganisms or toxins derived from living organisms used for hostile purposes intended to cause disease or death in man, animals and plants, on which they depend". The threat of bioterrorist attacks is real, and each individual is a potential terrorist, when terrorists are "invisible" prior to an attack which also can be "invisible" in the form of causing infectious diseases or epidemics. Citizens who are not aware they are infected are potential safety hazard and so-called dangerous bodies (Mijalković, 2011). In the last ten years, the issue of CBRN weapons has attracted the attention of experts, but a list of priorities by the heads of states has never been established. Biological weapons almost became forgotten after they had been banned by the 1972 Convention on Biological Weapons. A significant attention was paid to them during the 90s of the last century. The important thing is that biological weapons attract much less attention than other similar weapons, but probably represent the greatest danger, and in addition to their use in war, they are available as instruments of terror in peace. Some countries showed willingness to use such weapons against defenseless populations to achieve strategic objectives, and in this regard, some analysts believe that those who attacked the World Trade Center in 1993 applied cyanide on their bombs (this was not confirmed, but a large amount of cyanide was found in possession of the perpetrators). Such a group will prove to be less inefficient, because if terrorists decide to shock and surprise the government by inflicting enormous damage, CBRN weapons will become more attractive and more accessible (Bettis, 1998). Motives and forms of behavior of individuals and groups who acquired or used CBRN weapons have existed since long ago and there is no doubt that modern society is vulnerable to such attacks (Tucker, 2000). Fear of biological terrorism is certainly greater than the fear of the conventional forms of terrorism; some of these fears are justified and some are often exaggerated. Some agents are really very contagious and deadly, and if used properly, have a potential to result in casualties similar to those in a nuclear attack. Perhaps the scariest aspect of biological weapons is that the body is attacked without warning, people are afraid of the threat as it is invisible, and cannot be heard or felt. The history of warfare, terrorism and crime involving biological agents in the last century is considerably less dangerous and more deadly than the history of conventional warfare (Parachini, 2001). Today, some states and some terrorist groups can more easily overcome technological barriers due to the increased flow of information and access to previously unavailable technologies. Along with nuclear and chemical weapons, biological weapons are part of an unholy trinity of weapons of mass destruction (Davis, Johnson-Winegar, 2000, pp.15-28). The society is now faced with the threat of anapocalyptic and asymmetric war **scenario** in which kamikaze attackers are able to arm themselves with WMD4 without even having to have a "physical" weapon to create fear; they probably still prefer simple, proven methods: a stampede in an enclosed place, or just an explosive device, which will kill many people5 (Palmer, 2004, pp.3-9). Early detection and response to biological or chemical terrorism are crucial to solving this problem (U.S. Congress House, 2003, p.117).