# India CP

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# Counterplan Solvency

## India CP – India’s Launch Vessels are Capable

### India’s Satellite Launch Vehicles are well designed and are indigenous.

Jay Menon, Journalist for Aviation Week, “No Design Fault Found In Indian GSLV”, 2011 AviationWeek,

<http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=space&id=news/asd/2011/06/03/09.xml&headline=No%20Design%20Fault%20Found%20In%20Indian%20GSLV>, Online. AD

A failure analysis committee has found no design problems with India’s Geo-Synchronous Satellite Launch Vehicle (GSLV), despite two successive failures in 2010. “We had the opportunity to look at all aspects of [the] GSLV, at not only the missions that failed but also the successful missions,” says G. Madhavan Nair, the chairman of the failure analysis committee and a former chief of the Indian Space Research Organization (ISRO). “We could not find any design deficiency with respect to the GSLV.” India’s GSLV program suffered a major setback when the GSLV (D3) and the GSLV-F06 suffered back-to-back failures in April and December 2010, with the rockets plunging into the Bay of Bengal minutes after liftoff. The group traced the loss of GSLV-F06 to a failure of the composite shroud on the vehicle’s Russian cryogenic engine. “The problem with GSLV is of a minor nature and it does not call for major changes,” Nair says. Discussions have begun with Russia regarding the shroud issue. The space agency plans to launch the Chandrayaan-2, India’s second unmanned mission to the Moon, and its planned human spaceflight missions onboard GSLV rockets. ISRO Chairman K. Radhakrishnan says the space agency has now decided to focus on developing indigenous cryogenic engines to power the Mk. 2 GSLVs. Radhakrishnan says the GSAT-7 and Insat-3D spacecraft, which were scheduled to be launched by the GSLV, will now go up on international launchers. “The idea is that in the next launch of GSLV, we do not want to put [up] a costly, complex satellite,” Radhakrishnan says.

### India’s rockets have the capability to send 2500 pound satellites into orbit, most GPS satellites weigh about 2000 pounds.

Press Trust of India, “ISRO successfully launches pslvc16”, 2011

<http://ibnlive.in.com/news/isro-successfully-launches-pslvc16/149706-3.html> , web. AD

India's PSLV-C16 rocket on Wednesday successfully launched into orbit the latest remote sensing satellite Resourcesat-2 that would study and help manage natural resources along with two nano satellites. ISRO's homegrown workhorse Polar Satellite Launch Vehicle placed in a 'Polar Sun Synchronous Orbit' Resourcesat-2, Youthsat and X-Sat about 18 minutes after it blasted off from the Satish Dhawan Space Centre launch pad here, 90 km from Chennai, at 10.12 am. "PSLV-C16 Resourcesat-2 mission is successful," a jubilant Indian Space Research Organisation Chairman K Radhakrishnan announced shortly after all the three satellites were hurled into space one after another 822 km above earth in a text book launch. The ISRO chief's announcement was cheered by the battery of scientists at the mission control centre who heaved a sigh of relief as they were gripped by an added anxiety following two successive failures of GSLV missions last year. The 1,206 kg Resourcesat-2 with a space life of five years replaces Resourcesat-1 launched in 2003 and would provide data with enhanced multi-spectral and spatial coverage on natural resources.

## India CP – Moon Program Success

### India has successfully launched probes which have made important discoveries about the moon.

Einhorn ‘09

**Bruce Einhorn, Regional Editor of Bloomberg BusinessWeek, “A win for India’s space program” 2009,**

<http://www.businessweek.com/blogs/eyeonasia/archives/2009/09/a_win_for_indias_space_program.html>**, web. AD**

Now, though, ISRO fans don’t have to resort to poor-taste defensiveness. Indeed, Indians can crow that their nascent space program, through its short-lived Chandrayaan-I, has helped make one of the most important discoveries in the history of human exploration of the Moon. A NASA probe aboard the Chandrayaan-I detected water on the Moon’s surface, and the Indian press is euphoric. “One Big Step for India, One Giant Leap for Mankind,” crowed the Times of India. “If it weren’t for them (ISRO), we wouldn’t have been able to make this discovery,” the paper quoted Carle Pieters, the Brown University researcher who analyzed the data from the NASA probe, saying.

## **India CP** – **India vs. China Space Race**

### India’s space program is on par with China’s – they have successfully launched a mission to the moon.

Singh ’08 Madhur Singh, “India gains on China in Asia’s space race”, Time, 2008, [http://www.time.com/time/world/article/0,8599,1852608,00.html](http://www.time.com/time/world/article/0%2C8599%2C1852608%2C00.html), web. AD

Asia's space race just got a whole lot tighter: India's successful launch on Wednesday of its first moon mission, the unmanned Chandrayaan-I, marked a dramatic step forward in its race with China to put a man on the moon. China had stolen a march in 2003 by becoming only the third nation to fly a man into space (after the U.S. and the old Soviet Union), but when, ten days from now, Chandrayaan-I drops a probe bearing India's flag onto the moon, India will become only the fourth country to plant its colors on the lunar landscape — after the Americans, the Russians, and Japan. The mood in the control room was of jubilation as stern-faced scientists relaxed and broke into applause when all the separation processes were completed smoothly. With space capability deemed to translate into greater technological standing and strategic clout, the moon mission has been a giant ego-boost for India. "It is a proud moment for us," Science and Technology Minister Kapil Sibal said after the countdown began on Monday.

### A series of successful launches of meteorological and communications satellites as well as successful lunar missions proves that India is as capable as China in Space research.

Hennock ‘08

Mark Hennock, “The Real Space Race Is In Asia”, Newsweek, 2008, <http://www.newsweek.com/2008/09/19/the-real-space-race-is-in-asia.html>, **web. AD**

China sees its spacewalk as a way of proving that it belongs with the United States and Russia in the top tier of space-faring nations. But its true opponent in this space race is not the West so much as its Asian neighbors—India in particular. India has in recent years transformed its space program from a utilitarian affair of meteorological and communications satellites into a hyperactive project that seems designed to make a splash on the world stage. Its robotic-exploration program is scheduled to launch a probe on Oct. 22 that will orbit the moon for two years. And Japan is considering expanding its well-established (if less ambitious) space program—which includes research on the International Space Station and a respectable commercial satellite business—and exploring military applications. Against this backdrop, Beijing's dominance is not unshakable. Just as the Soviet Union's launch of its Sputnik satellite back in 1957 was only a fleeting victory, China's recent accomplishments have provided merely the opening salvos in a modern-day Asian space race.

### India’s space program is more cost-effective than China’s, while also having more advanced probes.

Chanana ’08 **Dweep Chanana, The Discomfort Zone, “The Asian Space Race: Where India Wins”, 2008,** <http://www.planetd.org/2008/10/22/the-asian-space-race-where-india-wins/>, **web. AD**

Yet, there are critical differences in and benefits to India’s approach. First, it is substantially cheaper than any existing or forthcoming mission: Chandrayaan-1 cost about USD 79 million, while the upcoming Lunar Reconnaissance Orbiter from NASA is expected to cost USD 500 million. This emphasis on cost efficiency is a legacy of India’s resource constrained innovation environment, and has been a hallmark of most technical projects. It also gives India a long-term competitive advantage over other nations: Earlier this year India was ranked by analysts at Futron, a hi-tech consultancy, as only a fraction behind China in global space competitiveness rankings, and well ahead of Japan, Israel and Canada. It is also building a low-cost, hi-tech base. China’s Chang’e I cost nearly double India’s Chandrayaan I bill of $86m. Second, despite being cheaper, the lunar probe is more technologically advanced than the Chinese and Japanese probes. For the first time, this will allow high-resolution mapping of the moon’s atmosphere and surface.

## India CP – Satellite Network

### India has a capable satellite program with 24 satellites in the INSAT system.

India Space Research Organization, 2008 ISRO, 2008, “Geo-stationary satellites”, <http://www.isro.org/satellites/geostationary.aspx>, **web. AD**

The Indian National Satellite (INSAT) system which are placed in Geo-stationary orbits is one of the largest domestic communication satellite systems in Asia-Pacific region. Established in 1983 with commissioning of INSAT-1B, it initiated a major revolution in India’s communications sector and sustained the same later. INSAT space segment consists of 24 satellites out of which 9 are in service (INSAT-2E, INSAT-3A, INSAT-4B, INSAT-3C, INSAT-3E, KALPANA-1, GSAT-2, INSAT-4A and INSAT-4CR ) The system with a total of nearly 200 transponders in the C, Extended C and Ku-bands.provides services to telecommunications, television broadcasting, weather forecasting, disaster warning and Search and Rescue operations.

## India CP – Budget

### India has the monetary means to develop its space program

Jayaraman ’11 K.S. Jayaraman, Space News, “Indian Space Budget Boost”, 2011, <http://www.spacenews.com/civil/110301-indian-space-budget-boost.html>, **web. AD**

The Indian government has allotted 66 billion rupees ($1.45 billion) for the Indian Space Research Organisation (ISRO) in the 2011-2012 budget presented to the parliament Feb. 28, a spending plan that represents a significant increase over the last fiscal year but contains no new program starts. “It is a 36 percent increase over last year’s budget but lower than expected,” ISRO spokesman S. Satish told Space News. Given India’s 8 percent inflation rate, the money is enough to keep the current programs going and no new projects are being taken up, he said. According to budget documents, 40 billion rupees has been earmarked for satellite and launch vehicle development. Included in that account is 660 million rupees for development activities related to India’s human spaceflight ambitions. Space science projects, including atmospheric and climate change studies, will receive 3.5 billion rupees. Of that total, 800 million is allocated to Chandrayaan-2, a lunar exploration mission being developed jointly with Russia and slated to launch in 2013. Space applications, including natural resource management and tele-education, will receive 8.5 billion rupees for the fiscal year, while the remaining ISRO funds are to be used mostly for operating the Insat communications satellite system.

## India CP – Capabilities

### Indian Space Program is cost effective and high-tech.

Singh ’09 Madhur Singh, Time, “Water on the Moob Buoy’s India’s Space Program”. 2009, [http://www.time.com/time/world/article/0,8599,1926393,00.html](http://www.time.com/time/world/article/0%2C8599%2C1926393%2C00.html), **web. AD**

But after overseeing successful nuclear tests in 1998 and riding high on nationalist euphoria over breaching international non-proliferation norms, the right-wing, BJP-led National Democratic Alliance government agreed to an ambitious moon program. Then Prime Minister Atal Bihari Vajpayee, who approved Chandrayaan-I at the Independence Day function on August 15, 2003, said he wanted India's space program to become one of the best in the world. Supporters of the program argued that a lunar mission would provide untold technological spin-offs. Many of those same enthusiasts now say they have been vindicated. Operating a satellite at a distance ten times beyond anything they had done before has given the ISRO valuable experience in hi-tech spacecraft, rocketry and advanced remote navigation technology. At $79 million, the program's budget also comes in way under those by many competitors. The ISRO now wants to land a craft on the moon by 2013 and has reaffirmed its commitment to sending a mission to Mars by 2015. ISRO wants to garner a larger share of the increasingly competitive commercial satellite launch market. On Thursday, it launched six European and Turkish satellites from its Polar Satellite Launch Vehicle. "[The] returns, in terms of the science, the technology, inspiration, stature, prospects for international cooperation... are immense," K. Kasturirangan, former ISRO chairman who conceived Chandrayaan-I, told TIME before the launch. It doesn't hurt that the country's celebrating too.

## India CP – Mars Mission

### India is planning a mission to Mars proves it is capable of launching satellites far and cost effectively. AD

Rediff News, ’09 Rediff News, “ISRO to Launch Mars Mission by 2015”, 2009, <http://news.rediff.com/report/2009/aug/31/isro-to-launch-mars-mission-by-2015.htm>, **web**

Unfazed by the abrupt end to India's [ Images ] maiden unmanned moon odyssey Chandrayaan-I, the Indian Space Research Organisation on Monday said it planned to launch the country's mission to Mars [ Images ] some time between 2013 and 2015. "We have given a call for proposal to different scientific communities. Depending on the type of experiments they propose, we will be able to plan the mission," said G Madhavan Nair, chairman of ISRO. "The mission is at a conceptual stage and will be taken up after Chandrayaan-2," he added. "Mars is very much in our agenda... It will be a challenge for us and we will chalk out a programme soon." "You cannot plan a mission on Mars just like that. Only once in two years, we get the opportunity," said Nair, who is in Goa [ Images ] at the eighth international conference on low cost planetary missions. Nair said the odyssey to the red planet would be cost-effective like Chandrayaan-I, which was pegged at $100 million (about Rs 500 crore) and was classified as one of the low cost missions. India is known for implementing cost-effective missions, he said.

## India CP – Cost-effectiveness

### India’s space program has similar capabilities to other countries while also being extremely cost-effective

The Hindu News ‘10

The Hindu News, “ISRO exploring low-cost access to space”, 2010, <http://www.thehindu.com/news/states/article387440.ece?homepage=true>, **web. AD**

The Indian Space Research Organisation (ISRO) is exploring low-cost access to space and has begun taking various measures, ISRO Chairman K. Radhakrishnan has said. He was delivering the inaugural lecture under the Popular Lecture Series organised by the Indian Institute of Science Alumni Association Science Forum here on Saturday. Dr. Radhakrishnan said that by 2012, low-cost access to space would be made possible by ISRO's GSLV Mk3 with indigenous cryogenic technology. “Right now, the cost per kg is $20,000. With GSLV Mk3, the cost can be reduced by half,” he added. India had been applauded for its shoestring budget for space programmes, which was three per cent of NASA's budget, 12 per cent of Europe and one-third of China's, he said. He stressed the need to develop innovative technologies for low-cost access to space. Dr. Radhakrishnan said that the human space flight was the next logical step for India. “We have a human space flight programme and ISRO is going to put two Indians in an orbit around the Earth,” he said.

## India CP – Manned Mission

### India has a plan to send a man to space, making it the fourth nation to have astronauts in space.

Beary, BBC ’10 Habib Beary, BBC News, “India announces first manned space

mission”, 2010, <http://news.bbc.co.uk/2/hi/south_asia/8483787.stm>, **web. AD**

India's space agency has said it will launch its first manned mission to space in 2016. A senior official of the Indian Space Research Organisation (Isro) in Bangalore said that two astronauts would take part. "We are preparing for the manned space flight," Isro Chairman K Radhakrishnan told reporters. "We will design and develop the space module for the manned mission in the next four years," he said. Observers say India is emerging as a major player in the multi-billion dollar space market. In September it launched seven satellites in a single mission, nearly a month after the country's inaugural Moon mission was aborted.

# Net Benefits

## India CP - Chinese Deterrence (1/4)

### Indian space development needed to counter China and cause economic growth

Madhur Singh 2008. [http://www.time.com/time/world/article/0,8599,1852608,00.html](http://www.time.com/time/world/article/0%2C8599%2C1852608%2C00.html)

Asia's space race just got a whole lot tighter: India's successful launch on Wednesday of its first moon mission, the unmanned Chandrayaan-I, marked a dramatic step forward in its [race with China](http://www.time.com/time/world/article/0%2C8599%2C1843865%2C00.html%22%20%5Ct%20%22_blank) to put a man on the moon. China had stolen a march in 2003 by becoming only the third nation to fly a man into space (after the U.S. and the old Soviet Union), but when, ten days from now, Chandrayaan-I drops a probe bearing India's flag onto the moon, India will become only the fourth country to plant its colors on the lunar landscape — after the Americans, the Russians, and Japan. The mood in the control room was of jubilation as stern-faced scientists relaxed and broke into applause when all the separation processes were completed smoothly. With space capability deemed to translate into greater technological standing and strategic clout, the moon mission has been a giant ego-boost for India. "It is a proud moment for us," Science and Technology Minister Kapil Sibal said after the countdown began on Monday. Some have questioned the logic of a country still so deeply mired in poverty spending $80m on a scientific pursuit akin to reinventing the wheel. Dr K. Kasturirangan, who was chairperson of Indian Space Research Organisation (ISRO) when the Chandrayaan-I project was announced, has no patience for this argument: "It is not a question of whether we can afford it," he says, "it's whether we can afford to ignore it." He points out that $80 million is a relatively low budget for a space mission. "And the returns, in terms of the science... the technology, inspiration, stature, prospects for international cooperation... are immense." For one, it will help India cement its position in the commercial satellite launch sector, and it will give the ISRO valuable experience in building hi-tech spacecraft, improved rocketry and more advanced remote navigation technology — all of which could be put to many uses. In addition, the probe will spend the next two years mapping the entire lunar surface for minerals, including Helium-3 which is sought for nuclear fusion research, to which India could lay claim in future. India's scientific community also hopes such prestigious projects will help them compete with the better-paying private sector to attract more scientists to the country's space program. ISRO programs have, until recently, focused mainly on the country's development needs, launching satellites for landscape and resource mapping, weather forecasting, communications and educational broadcasts. In recent years, though, it has been trying to win a larger share of the international commercial launch industry, launching satellites for Canada, South Korea, Israel and other countries. But Chandrayaan-I takes India's space program to a new frontier. "This is really a gear shift in a sense," says Subhadra Menon, whose book *Destination Moon* chronicles the history of the lunar mission. "Chandrayaan-I is a purely scientific, exploratory mission." And then, of course, there's the strategic dimension, with Japan, South Korea and, especially, China heating up the Asian space race. China, long viewed as India's most important strategic competitor, caused a storm last year when it shot down one of its defunct satellites, sparking fears of an arms race in space. In October last year, China launched its first mission to orbit the moon. China's exploits are definitely a factor in India's space efforts, says Swapna Kona Nayudu, associate fellow at New Delhi-based Centre for Land Warfare Studies. "We're neighbors, rising Asian giants and suspicious of each other," she adds. Now, the two nations will now compete to land a man on the moon — both have [announced plans](http://www.time.com/time/world/article/0%2C8599%2C1712812%2C00.html%22%20%5Ct%20%22_blank) to do it by around 2020. Meanwhile, back on Earth, India's ruling Congress party is hoping that the surge of techno-nationalism spurred Chandrayaan-I and, before it, the Indo-U.S. nuclear deal, will boost its prospects in next year's elections. The government has recently approved Chandrayaan-II, a much more ambitious mission to send a lander/rover to the moon by 2012. ISRO has also announced that it aims to send robotic missions to other planets and asteroids. "What is the purpose of 8% [economic] growth if we can't make the spending necessary to sustain this growth," says Kasturirangan, pointing out that like nuclear technology, space capability for a lunar mission is one of the indices of high-technology development that a developing country like India must acquire not only assert its stature but also to power its own growth. "The 21st century will be the century of planetary exploration. If India wants to be taken seriously among the leading space players, it must first get the right credentials." But later this week, when newspaper headlines return to high inflation and a slowing economy, even the most moonstruck of Indian voters will forget the excitement of Chandrayaan-I. Then, only astrologers will see the moon as having any bearing on how Indians will vote early next year

India CP - Chinese Deterrence (2/4)

### Proactive Indian space development needed to deter Chinese aggression

Radhakrishna Rao, 2009. <http://www.ipcs.org/article/nuclear/is-chinas-space-militarization-a-threat-to-india-2842.html>

A recent fact-filled 78-page analysis of China’s rapidly expanding military capabilities by the Pentagon with a focus on its developing “disruptive technologies,” points to Chinese advances in acquiring the capability to attack satellites for refining its space war strategy. Accusing China for being less than transparent on reporting its military spending and security doctrines, this report to the US Congress, the first under the Obama administration, also refers to China’s strides in cyber war and electromagnetic warfare capabilities. Incidentally, the report comes just weeks after Chinese naval vessels tangled with a US naval surveillance ship, which led China to accuse the US of spying. Coming to Sino-Indian relations, the Pentagon report, “Military Power of the People’s Republic of China,” says that the Chinese People’s Liberation Army (PLA) is concerned with persisting disputes along China’s shared border with India, and the strategic ramifications of India’s emergence as an economic, military and political power. Even as China shows keenness to improve its ties with India, its military incursions in Sikkim and the line of actual control (LAC) in Arunachal Pradesh, deployment of nuclear submarines at an ultramodern facility at Hainan Island in the South China Sea, and its growing defense ties with Pakistan, remain matters of concern for New Delhi. China’s massive military modernization, vigorous efforts to develop a range of space weapons and heavy-lift space vehicles, and a sustained move towards increasing the range and lethality of missiles are not merely exercises to compete militarily with the US .Their purpose is to deter American in intervention should Beijing deciding to overrun Taiwan by force. With defence analysts agreeing that India cannot remain unconcerned about Chinese advances in space warfare, Indian Defence Minister, AK Antony, has expressed concern over the possible threat to “Indian space assets” from developments in a neighbouring country. Antony left no one in doubt that he was referring to China, and chose to focus on the Chinese threat from space while addressing the United Commanders Conference in New Delhi held in June 2008. Antony did not mince his words while underscoring India’s angst over the “emergence of anti satellite weaponry, a new class of heavy lift off boosters and improved array of military space devices in our neighbourhood.” Antony was apparently highlighting the Chinese threat to Indian space assets in the context of a growing clamor to establish an Indian aerospace command. Antony backed up his concern by announcing the formation of a tri-service space cell as a precursor to creation of the command. Antony also wondered how long India could “remain committed to the policy of the non weaponization of space even as counter space systems are emerging in our neighbourhood.” Way back in 2007, following the Chinese anti-satellite test, the Indian Parliament held a debate on the ramification of the Chinese action with reference to India. Antony made it clear that India could safeguard its space assets from a threat emanating from across the border. While China stunned the world in early 2007 by destroying an aging weather satellite positioned at an altitude of 537 miles above the earth by firing a ground based medium range ballistic missile, it would need a more refined, long range missile to attack spacecraft meant for communications and navigation that are normally placed in higher orbits. After this anti-satellite test, G Madhavan Nair, Chairman, Indian Space Research Organization (ISRO), said that though it was within the capability of ISRO to deploy an anti-satellite weapon, India’s concern was to keep outer space a zone of peace and tranquility. Taking a cue from early Russian and American experiments, China is working on space-based laser weapons to knock down enemy spacecraft. “They let us see their satellites. It is as if they are trying to intimidate us,” says Gary Payton, a senior Pentagon official dealing with space. The East Asian Strategic Review (2008) brought out by Japan’s National Institute for Defence Studies states that “the organizations involved in China’s space development program share strong ties with PLA and a large proportion of the satellites launched and operated by China are believed to be used for military purposes.” Joining the chorus for discussions after the Chinese anti-satellite test, VK Aatre, a former chief of India’s Defence Research and Development Organization (DRDO), had strongly advocated the need to ensure that Indian ”space assets” are not vulnerable to, “extraneous threat”. He was clear that future wars would be fought in outer space.

India CP - Chinese Deterrence (3/4)

### India sees China militarization as a threat and will militarize to counter, sparking tensions

Theresa Hitchens 2007. [Theresa Hitchens is Director of World Security Institute’s Center for Defense Information and the author of “Future Security In Space: Charting a Cooperative Course,” She also leads CDI’s Space Security Project. She serves on the editorial board of The Bulletin of the Atomic Scientists, and is a member of Women in International Security and the International Institute for Strategic Studies.] kms1.isn.ethz.ch

And the most worrisome question of all – beside the potential for spark-ing a Sino-U.S. ASAT race – is whether China’s other rival nations, most specifically, India, will seek to react in kind. India’s media, predictably, has been harshly denouncing the Chinese test as a threat to India. “It threatens our own expanding civilian space assets, undermines the credibility of our nuclear deterrent, and exposes New Delhi's lack of a military space strategy,” the *Indian Express* newspaper said in an editorial on Jan. \_0.\_1 M. Natarajan, science advisor to India’s Defense Ministry, said the government would be especially concerned if such Chinese missiles could “disable” satellites with military and/or navigation capabilities and told reporters that the Indian government is assessing “steps we need to initiate in this direction.”\_\_Unfortunately, the Chinese test comes amid a renewed push by the Indian Air Force to establish a military hold on Indian space policy and funding; a push that has been underpinned by Air Force lobbying regarding the “China threat.”\_\_ There has been a steady drum-beat for a number of years regarding India’s need to compete in military space, including the development of ASAT weaponry. In April \_00\_, Chief Air Marshall S. P. Tyagi told reporters in New Delhi that India intends to set up a Strategic Air Command, in part to lay the groundwork for counter-space capabilities.\_\_ His remarks echoed those of his predecessor, Srinivaspuram Krishnaswamy, made in October \_00\_, telling reporters that work on the command was aimed at deploying weapons in space: “Any country on the fringe of space technology like India has to work towards such a command as advanced countries are already moving towards laser weapon platforms in space and killer satellites.”\_\_ While up to now, the Indian government has largely turned a deaf ear to Air Force advocacy, the Chinese ASAT test may turn the tide in its favor. When asked about India’s anti-satellite capabilities, Natarajan refused comment, but noted: “Maybe we need to talk to ISRO [Indian Space Research Organisation].”\_

### Indian space development and command needed deny space to China and reduce threat

Anil Kumar, 2009. [Anil Kumar is a former Indian Air Force pilot]

<http://news.rediff.com/column/2009/jul/10/mp-anil-kumar-on-the-need-for-a-military-space-programme.htm>

How do we worst the AEW-symmetry in our unfriendly neighbourhood? One obvious first step is creating asymmetry through the assimilation of our space prowess. We need to develop and deploy space-based assets so as to cumulate sensor inputs, datalink it to the networked military command and control system from where it can be fed to the field units and commanders. This will enhance the battlefield situational awareness through real-time projection of the battlefield. For this, the Indian armed forces will have to attain network centric warfare (NCW) capability, but they are just inching, not marching towards that goal. NCW will pivot upon the networking of terrestrial, nautical & aerospatial radars; AEW platforms; air defence fighters, missiles & artillery batteries; communication centres; electronic warfare systems and aggregation of other air defence assets of army and navy. Thus, a net-centric apparatus will enable the military to interlock geographically scattered units to operate as a unified force, thus maximising our reach and offensive power, thus maximising our chances of aerospace dominance. Hence, the government's present piecemeal approach and hesitation to found an integrated, triservices NCW system are truly baffling. Though we enjoy the edge over Pakistan in satellite technology, one cannot rule out China -- Pakistan's soul mate and an alleged, unapologetic proliferator -- sharing its know-how and intelligence with Pakistan. China is light years ahead of us in offensive space technology; so our endeavour should be 'space denial.' In case of Pakistan, we must go all out to achieve total 'space control.' India must also prepare a contingency plan for the worst-case scenario -- China emerging as a 'rogue space power.' These are easier professed than done. For, high-tech structures like an aerospace command require dedicated military satellites interlinked with other ISR infrastructure. Leave alone establishing a fully-operational aerospace command, we are aeons away from using space for real-time snooping, warning, jamming and guiding precision-strike munitions.

India CP - Chinese Deterrence (4/4)

### Indian space capability causes Asian nations not to proliferate and promotes international cooperation

Jacob Chriqui 2006. [Research intern at ipcs]

<http://www.ipcs.org/article/military/military-applications-of-indias-space-program-the-military-surveillance-and-2043.html>

Advances in India's space program are a symbol of the country's sophisticated technological abilities and its growing regional and global prestige. While India's space program focuses largely on scientific and commercial uses of space, such as urban development projects and reclaiming barren farmland, India's satellite-based Military Surveillance and Reconnaissance System, set to become operational in 2007, will provide India with dedicated military satellite intelligence. The set-up of extensive ground-based surveillance systems, connected to the country's remote sensing satellites, will enable India to keep a watch on all volatile regions, missile silos, sudden military build-ups, and troop movements in the neighborhood. Although this capability is not entirely new to Indian defense forces, the Military Surveillance and Reconnaissance System would substantially increase India's capability to monitor security interests and military developments in the region, significantly impacting South Asia's geo-strategic balance. India decided to develop an independent indigenous reconnaissance satellite capability after the 1999 incursion of Pakistani troops into disputed territory in Kashmir caught it by surprise. Several of India's current civilian satellites have resolutions that would make them acceptable spy satellites. The Technology Experiment Satellite (TES), launched by the Indian Space Research Organization (ISRO) in 2001, can distinguish objects and details on Earth as small as one square meter. The satellite is capable, for instance, of identifying troop movements along the Pakistani border, but would not be able to identify individual personnel. The ISRO says its programmes are civilian-related, but the organization has demonstrated its willingness to undertake military enterprises in the past. In 1992, for example, the U.S. Department of State imposed trade sanctions against the ISRO for its missile proliferation activities in India. As ISRO Chairman Dr K Kasturirangan commented after launching TES, "It will be for civilian use consistent with our security concerns." The TES has since successfully transmitted high-quality images of the war in Afghanistan and of Pakistani troop movements along the border. The advanced remote sensing satellite Resourcesat-1, launched in 2003, has a maximum resolution of approximately 6 meters. In 2005, the ISRO went on to launch the 2.5-meter resolution Cartosat-1 satellite, which has two cameras able to point at an object from two different angles, along with the capability to process stereoscopic data and generate digital elevation maps. Cartosat-2, set to launch next year, is expected to have better than 1-meter resolution and a 120 GB storage capacity for captured images. Officially, both of the Cartosat satellites will be used for cartographic purposes, but their potential dual-use (civilian and military) functions and reconnaissance capabilities could certainly enhance military interests and operations as well. Indian satellite capabilities have considerable implications for current nuclear deterrence stability with Pakistan. The planned Military Surveillance and Reconnaissance System would provide India with daily coverage of Pakistan's military installations, enhancing its ability to counter Pakistani forces and military operations. For instance, India would have the option of reliably launching a conventional strike against Pakistan's F-16s and other nuclear weapon delivery systems at their bases. Pakistan's missile forces could also be detected and monitored by Indian satellites and therefore might not be able to escape an Indian first strike, a factor which weakens Pakistan's deterrence and might consequently make Islamabad more likely to consider a pre-emptive first strike of its own. India's satellite intelligence capabilities could also provide its military planners tactical and strategic information on Chinese military forces in Tibet. Satellite reconnaissance would give Indian armed forces sufficient early warning about the movement of Chinese military forces from central China towards Tibet and India, thereby aiding the deployment of Indian forces in time to counter any movement of Chinese troops. At the same time, India's space program has the potential to substantially contribute to security and non-proliferation in the region. Satellite images and intelligence could be used to monitor military facilities under arms-control agreements between New Delhi and Islamabad or Beijing. Commercial uses for Indian space assets and the sharing of technology throughout the region could facilitate regional confidence and further current interdependence initiatives such as the South Asia Free Trade Agreement or the proposed Iran-Pakistan-India gas pipeline. This increase in regional cooperation could likely lead to a decrease in regional tensions and advance prospects for non-proliferation in South Asia. The international community could promote non-proliferation goals in India by creating an attractive package including greater space cooperation and potential increases in civil nuclear aid in exchange for decreases in the production of nuclear weapons and the partial disarmament of existing stockpile. Despite its limited resources, India has developed a broad-based space program with indigenous launch vehicles, satellites, data processing, and control facilities. The implementation of the Military Surveillance and Reconnaissance System would provide India with dedicated military satellite intelligence that would further the increasing role satellites play in India's security concerns. This asset could lead to a more unstable regional security balance, but with conscientious decision-making and clear policy objectives, might well provide a unique opportunity to enhance non-proliferation initiatives, promote regional confidence and facilitate India's emergence as a major player in Asian affairs.

## India CP – Economy (1/4)

### Indian space program will help fix land economy

Andy Mukherjee 2008.

<http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aiHtEJJTas7A&refer=home>

A rocket head being carried on the backseat of a bicycle. That's how French photojournalist Henri Cartier-Bresson's camera captured the initial years of India's space program, which began in the early 1960s. Many of the program's critics noted at the time that Prime Minister Jawaharlal Nehru was squandering the country's severely limited budgetary resources on an elitist reverie far removed from the realities of the newly decolonized, poor nation. Author and former United Nations diplomat Shashi Tharoor described the tension in his 2003 biography of Nehru. ``There was no limit to his scientific aspirations for India,'' Tharoor wrote in ``Nehru: The Invention of India.'' ``And yet the country was moored in the bicycle age at least partly because of his unwillingness to open up its economy to the world. ''Four decades after Nehru's death, his economic legacy, especially a dangerous flirtation with Soviet-style state planning, stands largely discredited. Yet his scientific aspirations are coming to fruition in an India that is twice as open to the world as it was just a decade ago, judging by the flow of trade and overseas investments in relation to the size of the economy. Last week, India put 10 satellites into orbit in a single mission, creating a new world record. Among the payloads was Cartosat-2A. It's an indigenously developed remote-sensing satellite that has already begun beaming high-resolution pictures of the Indian hinterland, setting the stage for what may be a revolution in the nation's finance. Satellite Communication India has already made extensive use of domestically developed communication satellites. In the mid-1980s, satellites made it possible for India to export computer software written in Bangalore to the U.S. In the 1990s, the same technology enabled India to set up a modern, nationwide, electronic stock market circumventing the lack of a robust, terrestrial communication network. In the southern Indian state of Andhra Pradesh, students in remote villages get access to an English teacher in the city via a satellite link. Later during the day, the same link may be used to set up a video conference between an urban doctor and his rural patients. Indian scientists have also effectively used images from outer space to map the missing nutrients in barren land so it can be reclaimed for agriculture. The next step is to combine satellite pictures of landholdings with field surveys and create a unified register of property titles. Land Titles That's going to be a key use of the images obtained from Cartosat-2A. These will have a resolution that's 36 times sharper than that of the images clicked by India's first remote-sensing satellite in 1988. ``Land is probably the single most valuable physical asset in the country today,'' a government-appointed committee on financial-sector development noted last month. ``Unfortunately, the murky state of property rights to land makes it less effective as collateral than it could be,'' said the panel headed by University of Chicago economist Raghuram Rajan. Improving the collateral value of land will mean more bank credit to more entrepreneurs at cheaper rates. The first stumbling block to achieving this goal in India is the absence of reliable visual representations of what a landholder actually owns; surveys in India have traditionally covered farmland because the British rulers had a strong revenue interest in it. Rural and urban dwellings have largely been left out. Not just that. A survey in Andhra Pradesh found that 9 percent of village maps were either torn or faded; an additional 29 percent were missing from official records. Gains Forgone ``Unless alternative options -- for example, use of satellite imagery -- can be explored, reconstituting village maps in the 30-40 percent of cases where these are either missing or not usable will require huge amounts of fieldwork,'' noted a 2007 World Bank study. ``Given the cost involved, it isn't surprising that this has rarely been done in practice.'' More than five years ago, McKinsey & Co. warned that India was losing as much as 1.3 percentage points of economic growth because of distortions in the land market, including titles that weren't legally foolproof. One of the indirect costs shows up in very small farmers not leasing out their land to those who actually have the stomach for taking the risks associated with agriculture. `No Assurance' If the owners of small strips of land were assured that by handing possession of their holdings to someone else they weren't diluting their ownership rights, they would gladly do so and come to cities to supplement their rental incomes. Urbanization will accelerate; manufacturing industries will gain a competitive advantage from cheaper labor. None of this is happening now because of dodgy property rights. ``Land title in India is uncertain and there is no assurance of clean title,'' Ascendas India Trust, a Singapore-based owner of office property in India, told potential investors last year. ``Title records provide for only presumptive title rather than a guaranteed title to the land.'' All that may change. The Indian government is planning a mammoth resurvey of all land -- partly using satellite imagery -- with the ultimate objective of creating a digital repository of all land records. The spirit of private enterprise that was stymied during Nehru's rule -- and crushed under his daughter Indira Gandhi's reign -- is already witnessing a surge. And it's getting a boost from Nehru's insistence on inculcating a scientific temper among his countrymen. Even when the last of the state-owned companies in India is sold off, this aspect of Nehru's legacy will endure.

India CP – Economy (2/4)

### Space programs necessary for Indian economic growth and resource collection

Satish Jha, March 27, 2011. http://www.dnaindia.com/india/report\_expedite-space-based-applications-manmohan-singh\_1525010

Prime Minister Dr Manmohan Singh urged scientists to expedite space-based applications in order to balance the share of economic growth in the society. Talking to scientists at the Indian Space Research Organisation (ISRO) on Saturday, Singh said that the unfortunate truth is that the fruits of growth are not equally shared among different segments of the society. "As the economy expands, there will be growing pressure on resources be it land, water or minerals. Remote sensing applications for such purposes will be critical. Space-based applications have strong means of bridging the divide and for this purpose there is a need to develop heavy lift launchers, advanced propulsion systems including the cryogenic state and recoverable and reusable launch systems," Dr Singh said. Stating that there have been aberrations and setbacks in the space programmes in the recent past. The PM shared his worries and said that it is therefore important that the scientists should work with renewed dedication, sincerity and zeal to fulfil the high expectations that the country space programmes. Demonstrating his keenness on the young scientists of resurgent India and the future of the country, Singh said that as a teacher he hopes that the Indian Institute of Space Technology will attract best minds and grow into a world class institution. The Prime Minister also said that there is much more that needs to be done. Tele-education, tele-medicine and Village Resource Centre services deserve high priority.

### Space Industry grows faster than global economy; key to growth

People Daily 2008 http://english.peopledaily.com.cn/90001/90776/90884/6616103.html

International space industry grows vigorously despite the sluggish global economy. Intensive space activities, particularly since March this year have repeatedly made headlines in global international media: China's lunar probe Chang'e-1 ended its 16-month mission with a controlled crash onto the moon; the US launched Kepler space telescope designed to discover Earth-like planets orbiting other stars; Russian and US astronauts completed a five-hour spacewalk; European Earth Gravity Field and Ocean Circulation Explorer will be launched soon… India researches into manned spacecraft Indian Space Research Organization has sent its first unmanned lunar probe with a homemade carrier rocket on Dec.22 last year, which marked the beginning of India's lunar exploration. According to India's lunar project that has been made public, the south Asian country plans to launch the second unmanned lunar explorer by 2012 and the manned space mission by 2015. India is expected to complete its first space walk in 2020. Currently, the manned space project in India has been helped by Russia’s Space Agency. Russian spacecraft Soyuz will carry Indian astronauts into space in 2013. Moreover, India also plans to launch an unmanned Mars observer in 2012. International cooperation in the field of space exploration has further deepened and expanded. So far nine countries have inked a lunar probe deal. China has made great contribution in this regard. Cooperation between China and other countries and regions such as Brazil and Europe on satellite research and development facilitates as well as the development of related technology has improved.

India CP – Economy (3/4)

### India heading into space causes great economic benefits.

U. Shankar, The Economics of India's Space Programme—An Exploratory Analysis, Oxford University Press, New Delhi, 2007.

Major social and economic benefits are derived through careful design of space systems taking account of needs of users engaged in economic and social activities. As satellite systems provide intermediate inputs emphasis is given to downstream activities through industry and other actors involved in government and non-government entities. While communication satellite systems could be made cost effectively, the remote sensing satellites which are established as public good investments and the launch systems have demonstrated comparative advantage in costs. INSAT satellites became the main stay for the Television broadcasting and providing nation wide connectivity. They network radio stations, provide rural area communications, business communications and tele-education and telemedicine services. They are also used to relay cyclone warnings, gather meteorological data, assist weather forecasting, provide emergency communication support during disasters and extend search and rescue support. Many applications of RS techniques yield wide range of benefits, in terms of water resource management, reclamation or/and better utilisation of wastelands, agricultural inventories, identification of potential fishing zones, preparation of urban area perspective/development plans biodiversity characterisation, coastal zone mapping, disaster management and periodical monitoring of the status of forest cover and so on. The RS techniques have become an important tool for developmental planning in India. These techniques also help policy makers to meet statutory and legal requirements in India and also comply with India's commitment to building information systems under various multilateral environmental and other agreements. The socio-economic impact of space endeavours are also enhanced through other dimensions such as development of space industry, promotion of spin offs from new technologies, export of goods and services and enhancement of international cooperation

India CP – Economy (4/4)

### Space helps the Indian Economy

Deloitte ’10 [Overview of Indian Space Sector 2010,

 http://115.113.225.49/webcms/Upload/Antrix-CII-Deloitte%20report%20on%20Indian%20Space%20Sector%202010.25Aug102.pdf]

7.3 Role/Benefits Of Space On Indian Economy

ISRO prepared to zoom into higher orbit following a nearly 35% hike in its budget. In 2009, ISRO's budgetary allocation was ` 41.67 billion (USD 0.91 billion). This year (2010-11) it has jumped to ` 57.78 billion (USD 1.26 billion). The spending for 2010-11 accounts for about 0.14 percent of GDP. The space expenditure as a percentage of GDP over the years is shown in Exhibit 6. Positive Impact of Space on Indian Economy: 1. In the short run: Spin-off Benefits A space program generally involves the development of cutting edge technologies. Even if something has been done before, it can be done in a more efficient manner. ISRO had received 150 patents (not all international) and equally importantly had transferred 268 technologies to industry. The aim of Space should be to reach the standards of the best in the world, and aggressively seek to commercialize spin-off effects and rake in the royalties to make the research self-sustaining, eventually. 2. In the medium run: Strategic Advantage India’s current space ambitions are something we would not have realistically thought likely even 10 years ago. If our ambitions are remarkable then they are so by our own standards. In the United States, which is the leading space faring nation right now, these achievements have become so mundane that private industry is aiming to commercialize them. While Virgin will take customers to space, Bigelow Industries already has a prototype (unmanned but with living organisms) space station in orbit. Google is sponsoring a competition for organizations to land a spacecraft on the moon, with little or no government assistance. That takes a lot of the glory out of the achievements but it does raise another important point: commercial exploitation of space technologies is becoming the newest frontier for business and the sky is literally the limit here. We do not know at this stage how big this business is going to be in the near term, so there is no urgency for India Inc to jump in immediately. But as ISRO builds these technologies for the future, it should ensure our domestic economic are not denied an edge that could be crucial. 3. In the long run: Necessity Predicting future trends beyond a few years is always wrought with danger. Based on current trends there are two resources for which human civilization should eventually have to look to space for: solar power and mineral resources. In view of our dwindling mineral resources and growing environmental concerns we are likely to look to space to meet our requirements. A time when mineral resources from the moon or the asteroids is comparable in cost to those from earth is very far. But when that time arrives the space faring nations will be at a huge advantage.

## India CP – Hegemony (1/2)

### Trying to maintain US hegemony destroys the economy—controlled descent from primacy is a preferable strategy.

Adamson 10 [Samuel A. Adamson, second-year MAIA candidate at the Johns Hopkins University SAIS Bologna Center and undergraduate degree in Oriental Studies from the University of Oxford, 10, Bolgona Journal of International Affairs, “Supreme Effort: A Lesson in British Decline”]

The aim of this essay is to demonstrate the extent to which the initial failure by British governments to recognize, accept and adapt to the country’s new position in the post-war world had deep, painful and long-lasting effects on the domestic British political economy. Rather than being a time of reflection and re-evaluation of the world order, the post-war consensus amongst successive governments was that Britain’s victory was a validation of the old, rather than a trigger for its removal. As such, sterling was expected to continue as the world’s reserve currency and the preferred unit of exchange. From 1945 until the major devaluation of 1968, one after the other, British governments oriented economic policy towards the maintenance of sterling’s international prestige, through the manipulation of the domestic economy. Using deflationary packages to curb demand and defend the pound against external pressure, the government indirectly (but repeatedly) inflicted punishing restrictions on British industry through a chronic underinvestment in capital. As Samuel Brittan has it, “The position of sterling as an international currency, with all the risks to which it exposed Britain, was regarded as desirable in itself, like a prisoner kissing the rod with which he is being beaten.”39 In a desperate attempt to improve British competitiveness, British governments then began to intervene in industrial relations, to the detriment of the Welfare Compromise that had presided over a relatively stable period from 1945 –1960. Government-union cooperation worsened throughout the 1960s under a Labour government and reached exploding point following the election of Heath’s conservative government. The British economy plumbed new depths in the 1970s, with factories being reduced to a three- day working week and with the entire population having to endure the infamous “Winter of Discontent.” Such harsh times brought about harsh measures, to be administered by Margaret Thatcher. Her reshaping of the British political economy marks the beginning of the current era for Britain, for better or worse. With increased focus, she drew onto the City’s financial services; however, at the moment it is difficult to see past the latter. Britain, still today, feels the pain of bone-breaking readjustment to the post-war world. It should also be emphasized that the thesis put forward here is only one example of the way in which the British government failed to adapt properly to the nation’s declining position in the post-war world. This paper could easily have taken as its topic of investigation the exuberant defense spending exhibited by an unbroken succession of British governments, characterized by the costly maintenance of an independent nuclear deterrent in obeisance to the “Top Table” argument or, as Churchill had it, “our badge to the Royal Enclosure.”40 The wider lessons to be drawn from the British experience are complex and difficult to identify clearly, as each declining hegemon (of which there have been —and will be— many) faces a potentially different set of international and domestic conditions. However, there is a clear and universal warning to be taken from the illustration presented here — a world power that may be in decline needs, more than ever, to maintain a high level of vigilance and flexibility in its attitudes to its international position. Being prepossessed of pretensions of past glories serves for nothing; rather it inhibits a nation in its readjustment. Therefore, the attitudes put forward by E. Garten in his essay regarding American decline (as outlined at the beginning of this paper) should be regarded as, at best, unhelpful, and at worst severely damaging to the future of the United States. For reasons that will not be argued here, however, I find myself in complete agreement with Garten regarding the undesirable nature of American decline, particularly in light of the candidates currently waiting in the wings to take the crown. Indeed, it is for that reason that this paper argues that it is wrong to assess the methods of “how to remedy signs of decline” (as Garten does), but rather suggests that it is instead critical to accept the inevitability of its occurrence, allowing for a more controlled descent, thereby minimizing domestic damage and allowing declining powers to still exert a good deal of influence on the international stage — at least due in part to their masterfully orchestrated readjustment to their dethronement.

India CP – Hegemony (2/2)

### India has a peaceful foreign policy driven by their need for economic growth

Menon ‘9 [Shiv Shankar Menon, Indian National Security Advisor, “India’s Foreign Policy, 19 January 2009,

http://74.125.155.132/scholar?q=cache:ZQwchQ9YsEIJ:scholar.google.com/+India+foreign+policy&hl=en&as\_sdt=1,5]

The true realization of our foreign policy potential had to wait for the end of the bipolar world in 1989 and our economic reform policies, opening up the Indian economy to the world. Historically speaking, India has been most prosperous and stable when she has been most connected with the rest of the world. In many ways, the period after 1991 has been the most favorable to our quest to develop India. The post Cold War external environment of a globalizing world, without rival political alliances, gave India the opportunity to improve relations with all the major powers. The risk of a direct conflict between two or more major powers had also diminished due to the interdependence created by globalization. And the strength of capital and trade flows was directly beneficial to emerging economies like India, China and others. We saw the evolving situation as one in which there is an opportunity for India. The consistent objective of our foreign policy was and remains poverty eradication and rapid and inclusive economic development. If we are to eradicate mass poverty by 2020, we need to keep growing our economy at 8-10% each year. This requires a peaceful and supportive global environment in general and a peaceful periphery in particular. The period since 1991 has therefore seen a much more active Indian engagement with the neighbours, whether through repeated attempts by successive governments to improve relations with Pakistan, or the border related CBMs with China, or free trade agreements with neighbours starting with Sri Lanka in 1998, or the Ganga Waters Treaty with Bangladesh. The period since 1991 has been a period of remarkable change in the scale of our ambitions, and in our capacity to seek to achieve them. The international situation made possible the rapid development of our relationships with each of the major powers. Equally important was another necessary condition which gave India space to work in: India’s rapid economic and social transformation. As a result of twenty five years of 6% growth and our reforms since 1991, India is today in a position to engage with the world in an unprecedented manner. Our engagement with the global economy is growing rapidly, with trade in goods and services now exceeding US$ 330 billion. Our needs from the world have changed, as has our capability. India can do and consider things that we could not do or consider twenty years ago. This is reflected in how India perceives its own future, its ties with its neighbourhood and its approach to the larger international order. The contrast between the world’s reaction to the 1974 and 1998 nuclear tests is instructive. And finally in 2008 we were able not only to break out of our nuclear isolation but to rewrite the rules in our favour by working with others to enable the NSG decision permitting international civil nuclear cooperation with India.

## India CP - A2: Perm

### US-Indian Cooperation on Space angers China

Brown 8 [Peter J, “China fears India-Japan space alliance”, Asia Times, November 12 2008, http://www.atimes.com/atimes/South\_Asia/JK12Df02.html]

India and Japan's agreement in October to expand cooperation between the Indian Space Research Organization (ISRO) and the Japan Aerospace Exploration Agency (JAXA), in the field of disaster management, has the raised the ire of a China fearful that the US is masterminding a powerful space alliance between its allies in the region. All of Asia wants to see improved regional disaster management capabilities, but the growing ties between ISRO and JAXA come just as India and Japan are devising an action plan to advance security cooperation. "China is concerned about the general effort of the US during the Bush Administration to form a Japanese-Indian alliance to contain China," said Dr Gregory Kulacki, senior analyst and China project manager at the Massachusetts-based Union of Concerned Scientists. "They are more concerned about what this implies about US intentions rather than what it implies about the intentions of the Japanese or the Indians, particularly as it concerns space."