



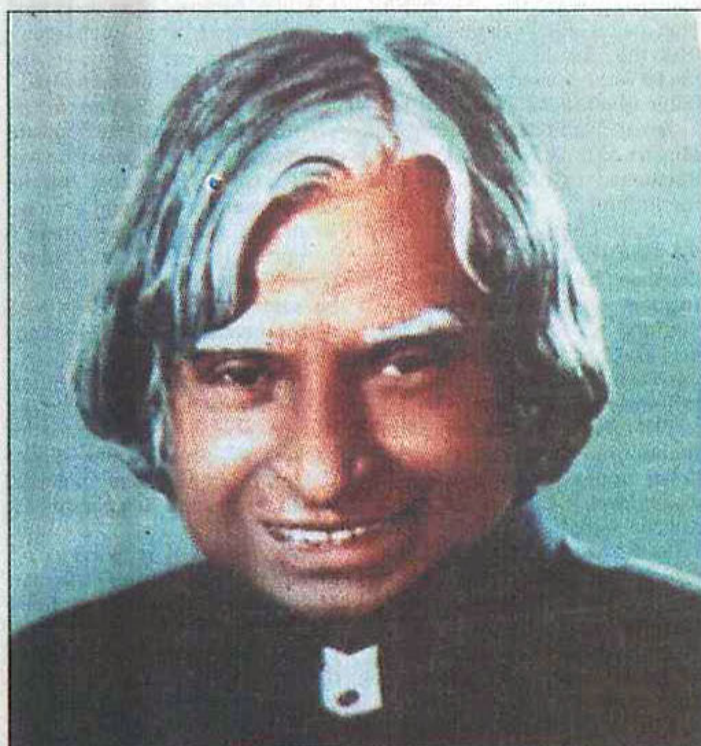
# 58<sup>th</sup> Republic Day of India



The Daily Star

SPECIAL SUPPLEMENT

JANUARY 26, 2007



Dr. APJ Abdul Kalam  
President of the Republic of India

## India's space odyssey From bullock cart to moon rocket

K. JAYARAMAN

**W**HY does India, a poor country, want to explore the moon instead of using that money to alleviate poverty?

That was the question raised six years ago when India's space agency ISRO (Indian Space Research Organisation) asked the government for \$65 million to build and launch an unmanned scientific spacecraft to circle the moon.

The government ultimately sanctioned the funds - the mission is all set to take place early 2008 but only after critics were appeased by protracted public debates and several seminars.

The scenario has changed considerably since then.

Nov 6, 2006, witnessed a dramatic twist when a cross section of the scientific community assembled in the southern Indian city of Bangalore to unanimously endorse ISRO's most ambitious and expensive

project to date -- a manned space flight -- without batting an eyelid.

The project, yet to be formally cleared by the government, will cost \$2.2 billion in the first phase to put an Indian in orbit by 2014, and at least twice as much in the second phase to land him or her on the moon by 2020 -- four years ahead of China.

If approved -- which is a certainty given India's scientist-President A.P.J. Abdul Kalam's backing -- India will join the select club of US, Russia and China that run manned space missions.

The decision marks a reversal of ISRO's proclaimed policy enunciated four decades ago by Vikram Sarabhai, father of India's space programme, who had said: "India does not have the fantasy of competing with the economically advanced nations in the explorations of the moon or planets or manned space flights."

Towing that policy, ISRO had all along maintained that manned missions do not justify the cost and

largest.

Sale of its images worldwide generates \$7 million in revenue to Antrix Corporation, ISRO's commercial arm. Within India, scientists have used the satellite pictures to combat deforestation, monitor desertification, and predict crop yields and to locate groundwater and increase fish catch.

Thanks to the INSAT network of nine communication satellites -- the biggest in the Asia-Pacific region -- 90 percent of Indians can watch television, get daily weather forecasts and disaster warnings.

The "super-cyclone" that hit India's eastern coast on Oct 29, 1999, could have killed thousands but for an INSAT satellite that tracked its course every half hour identifying areas that needed to be evacuated.

According to Nair, ISRO is keen to share the benefits of remote sensing with other developing nations. It will build and launch in 2009 the TWSAT (Third World Satellite) that

classrooms in the country. And what started in 2001 as a pilot telemedicine project -- bringing health care to the rural areas via satellite -- now links 165 smaller hospitals across the nation to 33 speciality hospitals in major cities. This means the patient in a village can get the best medical advice without travelling huge distances.

And with production lines for two types of rockets -- PSLV and GSLV India has also carved a place in the launch business.

It has launched small satellites for Belgium, Germany and South Korea and has payloads of European Union, Argentina, Israel, Singapore, Indonesia, Canada and France awaiting launch by 2008 end. The commissioning of the \$95 million second launch pad at Sriharikota in Andhra Pradesh state last year was in anticipation of the boost in launch business, says ISRO.

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Dr. Manmohan Singh  
Prime Minister of the Republic of India

### MESSAGE

**O**N the occasion of the 58th Republic Day of India, I would like to convey my warm greetings to the people of Bangladesh and to my fellow citizens living here. Since returning to Bangladesh, after little over four years, I have been engaged in the pleasant task of renewing old friendships and making new ones. I also look forward to working with all my interlocutors here to further strengthen Bangladesh-India relations and build upon the unique historical and cultural ties that link our countries together.

A stable, peaceful and prosperous South Asia is not only in India's interest but in the interest of the region. We believe that an inclusive community of nations in South Asia will enable each country to attain its shared objective of greater economic growth and development and ease trade and investment across our borders. In human resource rich countries such as ours, faster economic growth not only generates much needed employment but will help us address age old problems of poverty, illiteracy and disease.

As you are all aware, India's rapid economic growth over the preceding two decades has attracted global attention. I believe that an expanding Indian economy offers an unprecedented opportunity to our neighbors. India can be the engine of growth that will deepen economic engagement in our region. Just as India is prepared to play its rightful

role on the global stage, we are equally mindful of our regional responsibilities.

Underpinning the unprecedented globalization that is underway today is the quiet process of regional cooperation. In this, it is useful to remind ourselves that South Asian countries have a unique head-start. Revival of our old road and rail links offer us connectivities that will stimulate mutually beneficial trade and commerce. In addition to our common historical and cultural linkages, we have yet another advantage -- English as a common language. It is encouraging that the recent years have been marked by greater people-to-people interaction, be it for cricket matches, education or tourism.

Similarly, our trade with Bangladesh has been marked by an appreciable increase in Bangladesh's exports to India. I believe that Bangladesh's exports will be further boosted with the implementation of SAFTA. Alongside the rapid expansion of the Indian economy, Indian companies are increasingly emerging as important players in global investment. Both our economies can benefit through such investments.

As a friendly neighbour, India would like to see a stable, peaceful, democratic and progressive Bangladesh. We in India have not forgotten the valiant struggle for freedom by people of Bangladesh and the efforts made to institutionalise democracy in Bangladesh. Bangladesh is today

poised at an important juncture in its history. We in India hope that the people of Bangladesh will be able to exercise their democratic right to choose their government in free, fair and credible elections with the participation of all political parties.

Terrorism and extremism today pose the biggest challenge to stability and development in the world. Our region has borne a heavy burden. Terrorism not only erodes our economic potential and retards business confidence but imposes a heavy social cost. It is only through cooperation between countries that the menace of terrorism can be combated.

I take this opportunity to wish you all a peaceful, happy, successful and prosperous year ahead.



Pinak R. Chakravarty  
High Commissioner of India to Bangladesh



A nighttime view of the Pslv C6, the ninth flight of India's polar satellite launch vehicle.

used Sarabhai's statement to adorn the agency's annual reports and home page of its website until recently. The statement is not there now.

What caused the change?

"There are two reasons for this," ISRO chairperson Gopalan Madhavan Nair told this reporter. "We have set planetary exploration as our next long-term goal and human presence in space is essential for this effort."

Secondly, with India's economy booming, costs that used to be a problem before should not be of concern now.

Nair's predecessor, Udipi Ramachandra Rao, a key advocate of manned missions, agreed.

"Sarabhai's words are not relevant today as planetary exploration wants to build solar power stations in space to meet its energy needs, you need humans there to assemble the solar panels."

A third reason, not aired publicly, is a feeling in ISRO that it is losing ground to its neighbour China -- which in 2003 sent an astronaut into space -- and therefore should catch up.

If planetary exploration is ISRO's long-term goal and manned space flights are a prerequisite for this, why not team up with Russia or the US rather than go it alone?

Rao doubts if collaboration would work in the area of human space flights given the constantly shifting geopolitical equations and the fact that manned activities in space do have a commercial angle.

"We have to develop our own capability like the Chinese have done."

Self-reliance, in fact, has been the hallmark of ISRO, especially after the US and Europe banned the export of space technologies to India following its first nuclear test in 1974.

This turned out to be a blessing in the long run as it drove ISRO to reinvent technologies it could no longer buy, said Nair.

For instance, in 1993, ISRO decided to develop its own cryogenic engine after Russia reneged on transferring the technology. Oct 28, 2006, was a memorable day in ISRO's calendar when the home-made cryostage passed the "hot test". It will power ISRO's heaviest rocket GSLV (Geostationary Satellite Launch Vehicle) scheduled for launch in 2007.

In fact, ISRO embarked on developing the GSLV ignoring advice that Indians would find it cheaper to get their satellites launched by western rockets than developing the launchers themselves.

"I am glad we invested in developing our own launcher," said Rao. "But for that, we would not be talking today about manned mission."

ISRO's quest for self-reliance has extended to other areas as well. This year, it began setting up a \$320 million navigation satellite system to reduce the country's dependence on US owned Global Positioning System (GPS) satellites. But the real jewel in ISRO's crown is its constellation of seven remote-sensing satellites -- two will be added next year the world's

## India Inc. clocks US\$ 24 billion deals in 11 months

The Economic Times: December 7, 2006

**NEW DELHI:** There was no stopping the advance of India, Inc.'s dealwagon this year -- the overall value of deals marched ahead hand in hand with the total number.

The total value of the 694 deals that India clocked -- excluding the Tata-Corus transaction -- in the first eleven months of 2006 has shot up to \$24.06 billion. This is against the 467 deals worth \$18.2 billion that Indian companies sealed during the whole of 2005, according to data collated by Grant Thornton. Given that the last word on the Tatas' mega deal is yet to be written, India might end the year with a bumper \$33 billion-plus in M&A

transactions.

December, usually being a slow month in the West given the festive season, the key M&A trends for the year are already in place. Indian Inc's 2006 deal story can be summed up by the upsurge in private equity (PE) deals and its growing appetite for global acquisitions. The period under review saw 427-odd strategic M&A deals totalling about \$17.44 billion, while there were 267 PE transactions adding up to \$6.62 billion.

The significance of the PE deals can be gauged from this: of the total value growth of about \$6 billion this year, \$4.4 billion is accounted

for by these transactions. Also, PE deals have more than tripled from last year. In January-November, PE deals accounted for more than a quarter of the transaction value and around 40% of the number of deals.

The other major trend this year was the emergence of outbound deals. In the first half of this year, for the first time ever, the total value of outbound deals exceeded that of inbound deals. This has continued for the rest of the year with 167 total outbound deals in the Jan-Nov period totalling about \$8.4 billion as against 71 inbound deals worth \$4.99 billion.

## Heartiest felicitation on the occasion of The 58<sup>th</sup> Republic Day of India

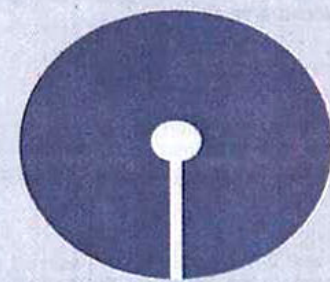


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