

**SPEECH DELIVERED BY SRI S JAIPAL REDDY, HON'BLE UNION CABINET MINISTER
FOR SCIENCE AND TECHNOLOGY, EARTH SCIENCES
AT BITS PILANI, HYDERABAD CAMPUS ON 10th OCTOBER 2013**

Salutations!

India has witnessed tremendous strides in the field of science and technology development since independence. The introduction of high-yielding varieties, fertilizers, chemicals, mechanization in agriculture led to the green revolution, which transformed India from food deficit country to food exporting nation. Our comprehensive range of skills and expertise has made us one of the seven nations worldwide with satellite building and launching capabilities.

Our remarkable success in IT industry has received global recognition. The IT & IT based electronic Services industry in India has today become a growth engine for the economy, contributing substantially to increases in the GDP, urban employment and exports, to achieve the vision of a powerful and resilient India. India's total IT industry's (including hardware) share in the global market stands at 7 per cent. Indian manufacturing sector has the highest IT spending followed by automotive, chemicals and consumer products industries. Nasscom expects the IT services sector in India to grow by 13 – 14 per cent in 2013-14 and to touch US\$ 225 billion by 2020.

Chemical industry in India has become a major constituent of Indian economy with an estimated US\$ 32 billion making India 12th largest producer of chemicals in terms of volumes in the world and 3rd largest in Asia. The establishment of Department of Biotechnology in 1986 opened enormous opportunities in this area. Today, there is adequate human resource, 300 biotech industries, producing 20 biotech pharma products and insect resistance Bt cotton worth more than US\$ 6 billion.

Recognizing the potential of India's science and technological capability, the Ministry of Science and Technology, Government of India has taken several new initiatives in the past decade. For the first time, the 12th plan budget has been increased 2 - 2.5 folds from 11th plan across various departments. On this enhanced base, the budgetary allocations further increased in all sectors of science and technology. New fiscal incentives have been announced for biotechnology, private sector R&D and pharmaceutical R&D. New modalities of public-private partnerships with budgetary allocations have been instituted. Several noteworthy achievements in terms of products and processes have been realized.

Globally and in India, the speed of technological innovation has increased exponentially in our lifetimes. Technological innovations have bypassed the politics, parties, and policies. However, we must admit that what has been achieved so far is not adequate, considering several challenges before us. India, with 1/6th world's population has 1/3rd of world's poor. Success in reducing the number of Indians living in poverty brings hope for expanding global prosperity. The statistics in the areas of reproductive health, infectious diseases (HIV, tuberculosis, respiratory disorders), child survival, disaster preparedness and response, ensuring clean and reliable energy and water, rapid agriculture growth, education and urbanization require us to prioritize and reorient our science and technology innovations and investments.

To address the challenges the India is facing today, we have to promote a multi-disciplinary and multi-faceted innovation capacity. In order to accelerate innovation and boost R & D, strategies have to be deployed to develop skilled human resource in our education institutions. The public and private research institutions then will be able to recruit and retain leading scientists, researchers, engineers, technicians and skilled experts. Nurturing excellence is important to achieve excellence. The areas for future innovations are in biotechnology, chemical biology, synthetic biology, brain research, information technology, nano-technology, material science, space technology energy transportation and ecology.

Strong intellectual property protections are the foundations for innovative R&D. A section of Indian industry especially pharmaceutical sector has already made rapid strides in restructuring these businesses to meet global standard through world R & D, global alliances, partnerships, collaborations and licensing etc. The next few years will be crucial for Indian industry as well as public sector R&D labs. Recognizing the challenge for efficient national IPR management system the Government has initiated action to modernize IPR offices, train the personnel, and increase IPR awareness and recently to set an exclusive institute for IPR.

Global economy is knowledge driven. We have to create, grow and nurture high technology clusters. Clustering is a term that economists have borrowed from science to describe the growth of a significant concentration of innovative companies around a nucleus of R&D facilities, such as those provided by a university or a leading-edge government laboratory. A cluster develops when a pocket of innovative knowledge-based firms acts as a magnet, attracting other firms to invest and locate in the same area. These firms gain strength when supported by strong research institutions, a concentration of capital and business expertise as well as an appropriate environment in which innovation can flourish. The two cutting edge areas for building technology clusters are biotechnology, nanotechnology and advanced materials.

Such new large-scale initiatives require simplification procedures for approvals, increased allocations for R&D and good management and monitoring practices. The current levels of R&D expenditure at around 1 per cent of GDP are not enough. We need at least 2% of GDP allocations.

Although it is fashionable and trendy to work in the cutting edge areas of S&T, we should realize among all factors, water and energy are ultimately going to determine the fate of economy on long run. The existing opportunities in various scientific disciplines and future technologies have to be deployed adequately to address energy and water needs of future. For example; in India per capita water availability was over 5000 cubic meters per annum in 1950. Now, it stands at 2000 cubic meters and it is estimated by 2025, the per capita availability would be around 1500 cubic meters. We should look for creative solutions for technology development in water availability, quality and water use efficiency and in ameliorating associated problems such as ground water depletion, salinization, pollution and contamination.

BITS Pilani, Hyderabad campus, India's leading higher education institute and a deemed university surrounded by natural beauty the campus is a very close from the Rajiv Gandhi International Airport and is also close to Hyderabad city. The campus has set up state-of-the-art infrastructure without affecting the scenic beauty of the campus. I understand , BITS Pilani, Hyderabad an extremely well equipped campus and around 700 bright minds are admitted every year into the first degree, higher degree and doctoral programmes. The academic community combines extensive research, training and industry experience to offer comprehensive education to students. I was also informed that currently over 40 research projects are active on campus, most of which are backed by prominent funding agencies.

I congratulate all the organizers, management and particularly students for organizing Technology Festival 2013. On this occasion, let us recall the achievements of India in the field of Science and Technology. It signifies our national spirit that 'we can accomplish the most difficult tasks of technology innovation, dissemination, and management even in the cutting edge frontier areas". Today is also an occasion to remember and salute the contributions of scientists and technologies of India who have made us self-sufficient in food and milk production, nuclear sciences, space research, energy generation and biological sciences.

To conclude, I wish this program a great success and all participants a very bright future.